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SWPPP SITE PLAN - FIG. 1



Document is available at the EPA Region 5 Records Center.

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**STORMWATER POLLUTION  
PREVENTION PLAN FOR  
CONSTRUCTION ACTIVITIES  
REVISION TO PLAN FOR PIPELINE  
CONSTRUCTION**

**BARRIER WALL  
GMCS AREA 2 – SITE R**

**Solutia Inc.  
Sauget, Illinois  
Illinois Permit No. ILR108258**

*Prepared for:*  
Inquip Associates, Inc.  
P. O. Box 6277  
McLean, VA 22106

August 14, 2003

**URS**

URS Corporation  
1001 Highland Plaza Drive West, Suite 300  
St. Louis, MO 63100  
(314) 429-0100  
Project # 21561236.00001

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- Appendix B Letter Notice to IEPA of Amendment to Existing SWPPP
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- Appendix D Inspection Forms
- Appendix E Product Specific and Spill Prevention Practices
- Appendix F General State Operating Permit

## **SECTION ONE**

## **Requirements**

### **1.1 REQUIREMENTS**

Stormwater Pollution Prevention Plans (SWPPP) are required by the State of Illinois Environmental Protection Agency (IEPA) to ensure the design, implementation, management and maintenance of Best Management Practices (BMP) in order to reduce the amount of sediment and other pollutants in stormwater discharges associated with land disturbance activities, comply with the Illinois Water Quality Standards, and insure compliance with the terms and conditions of the general land disturbance permit.

This SWPPP is an amendment to National Pollution Discharge Elimination System (NPDES) Permit No. ILR108258 issued by IEPA May 27, 2003 for related activities at the site. The following documents shall be kept on site during the life of this project:

- This SWPPP
- The original SWPPP for the Permanent Discharge Pipeline
- Copies of signed application forms (Notice of Intent)
- Specific NPDES permit issued by IEPA
- Inspection reports
- Amendments to the SWPPP
- Notice of Termination upon completion of all land disturbance activities.

### **1.2 PERMITTING**

The State of Illinois Environmental Protection Agency has issued a specific NPDES Permit for construction activities at this site. A copy of this Permit is in Appendix A. In order to obtain coverage under this general permit, the following permitting sequence is to be followed:

- Solutia will submit a letter to IEPA requesting an addendum to the existing SWPPP. A copy of this letter is in Appendix B.
- The next step is to implement this SWPPP.
- After construction and all land disturbance work is complete, and final ground cover has been established, submit Notice of Termination (NOT) (Appendix C) of coverage under the General Permit for stormwater discharges associated with construction site activities.

## SECTION ONE

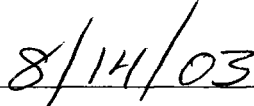
## Requirements

### 1.3 CERTIFICATIONS

#### 1.3.1 Plan Preparer


This plan has been prepared in accordance with the General State Stormwater Permit (NPDES Permit No. ILR10) and related IEPA guidance manuals.

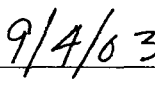
  
Plan Prepared by URS Corporation

  
Date

#### 1.3.2 Owner

We hereby certify that we are aware of and will comply with the terms and conditions of the General State Stormwater Permit and this SWPPP.

  
Site Manager  
Solutia, Inc.

  
Date

#### 1.3.3 Contractor

I certify under penalty of law that I understand the terms and conditions of the general National Pollution Discharge Elimination System (NPDES) permit (ILR100000) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

\_\_\_\_\_  
Site Superintendent

\_\_\_\_\_  
Date

Contractor: Inquip Associates, Inc., P. O Box 6277, McLean, VA 22106, 703-442-0143

Site address: 5 Riverview Avenue, Sauget, Illinois

## **SECTION TWO**

## **Project Description**

### **2.1 DESCRIPTION OF SITE AND PROJECT**

The work area for the Barrier Wall construction activities is located at Site R, at 5 Riverview Avenue in the City of Sauget, St. Clair County, Illinois. Site R is a closed industrial-waste disposal area. The work area lies along the east bank of the Mississippi River. The Barrier Wall is being constructed as a part of a project to control groundwater migration from the site to the Mississippi River.

Site R contains approximately 34 acres of land, not all of which will be disturbed by the construction of the barrier wall. The wall is approximately 3,500 feet long. The width of the area directly impacted by the wall construction equipment will vary from 50 feet to 150 feet. Other areas required for the construction of the wall include mixing of wall materials and backfill, and stockpiles of excavated materials that are not suitable for final wall construction. The work area is on terrain that slopes gently from east to west toward the Mississippi River.

Spoils excavated for the wall construction below the groundwater level should be considered to be impacted by hazardous materials. For this reason, special care shall be taken to control stormwater. Stormwater may be classified for the purposes of this project into three groups:

1. Run-on stormwater is that which is generated off site, beyond the boundaries of Site R. This stormwater shall be directed around the work areas and channeled to the Mississippi River without coming into contact with the disturbed areas.
2. Contact stormwater is that rainwater which comes into contact with excavated spoils from the barrier wall, groundwater which may be contained in the spoils, and that which is used to generate the slurry for the wall construction. All excess contact stormwater, that is not used in wall construction, shall be directed to a storage tank and treatment system supplied by Solutia, Inc.
3. Non-contact stormwater is that rainwater which falls on the site, that is not in contact with the wall construction activity. This stormwater may be directed to the Mississippi River through and using appropriate erosion and sediment controls as described herein.

### **2.2 CURRENT ACTIVITIES**

Site R is a closed industrial-waste disposal area owned by Solutia Inc. Activities such as groundwater monitoring and cap maintenance are routinely performed at this site by Solutia Inc.

## SECTION TWO

## Project Description

Solutia Inc. has constructed a permanent discharge pipeline, that is part of the groundwater migration control system that will address groundwater impact under the site. There are no full time employees at the site.

Overall, construction may be summarized as follows:

- ◆ Install erosion and sedimentation control measures prior to any land disturbance activity. Install stabilized construction entrances at Riverview. Sedimentation control measures may be installed in stages as the barrier wall construction proceeds. While the barrier wall is being constructed in Riverview, a second stabilized construction entrance may be required at the southern end of the site.
- ◆ Clear and grub the site as the work progresses in stages.
- ◆ Construct the Stormwater Treatment System (by others)
- ◆ Perform exploratory excavation along route of the barrier wall from approximately Station 12+50 to 31+50. This excavation is only expected to be 20 feet deep and should not intercept the groundwater. Therefore, only non-contact stormwater may be generated. The trench will be backfilled immediately with the excavated material. A temporary silt fence may be used for control of sedimentation runoff.
- ◆ Construct the barrier wall in stages starting at Station 12+50 and working northerly toward Station 31+50.
- ◆ A temporary stockpile will be constructed on the eastern portion of the existing landfill to contain excess excavated material. Runoff from this area should be considered to be contact stormwater.
- ◆ Perform exploratory excavation along Riverview Avenue. This excavation is only expected to be 20 feet deep and should not intercept the groundwater. Therefore, only non-contact stormwater may be generated. The trench will be backfilled immediately with the excavated material. A temporary silt fence may be used for control of sedimentation runoff.
- ◆ Continue to construct the barrier wall in Riverview Avenue.
- ◆ Perform exploratory excavation from Station 12+50 to 5+00. This excavation is only expected to be 20 feet deep and should not intercept the groundwater. Therefore, only non-contact stormwater may be generated. The trench will be backfilled immediately



## **SECTION TWO**

## **Project Description**

with the excavated material. A temporary silt fence may be used for control of sedimentation runoff.

- ◆ Construct the barrier wall from Station 12+50 to 5+00.
- ◆ Temporarily stabilize denuded areas within 14-days of last construction activity in that area. After the barrier wall is constructed in any area, the control devices may be converted from contact stormwater to non-contact stormwater function. Install additional erosion and sediment control devices as required.
- ◆ As outdoor construction activity is completed and the site is stabilized, reseed and fertilize any remaining areas disturbed by construction
- ◆ Stabilize disturbed areas following completion of final construction
- ◆ Continue inspections and maintenance until site is finally stabilized
- ◆ File Notice of Termination (NOT) of coverage under the General Permit for stormwater discharges associated with construction site activities.

### **2.3 SITE MAPS**

A site location map is in the general construction documents. Locations of the proposed erosion and sediment controls are provided in the site plans contained herein.

## **SECTION THREE**

## **Stormwater Management Controls**

### **3.1 EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION ACTIVITIES**

The general locations of erosion and sediment controls are shown on Figure 1. Filter fabric fencing will be used along the down gradient construction boundaries to trap sediment migrating from the work area and may be used to define and segregate work areas. All erosion and sediment controls shall be in place prior to disturbing the soils.

Due to the nature of the construction, it is anticipated that stormwater from any particular area may be classified as contact or non-contact at different times depending on the activity and stage of the construction. The Contractor may install and remove control devices to contain or segregate stormwater to accommodate the construction. No device that has been in contact with or used in a control for contact stormwater may be reused in a non-contact application. However, devices that have been used in a non-contact application may be reused in a contact application.

During the construction process, the Contractor may install temporary swales and berms to control erosion. Mulch shall be applied if the disturbed area will not receive final stabilization within 14 calendar days. Existing grass swales should be protected and utilized to slow the velocity of stormwater leaving the site.

The discharge rate used for sizing pumps, channels and swales, etc. should be calculated for a 24-hour, 25-year storm as follows:

- The volume and rate of run-off may be determined by use of the Rational Method  $Q = C \cdot I \cdot A$
- The run-off coefficient used for the site is 0.1
- From Rainfall Frequency Atlas of the Midwest, assuming a time of concentration of 15 minutes, the precipitation is 1.63 inches, giving a rate of  $I = 4 \cdot 1.63 = 6.52$  inches per hour
- $Q = 0.1 \cdot 6.52 \cdot 1 = 6.52$  cfs per acre = 49 gpm per acre

### **3.2 FINAL STABILIZATION PRACTICES**

After final construction is completed, the newly graded areas and exposed soils will be seeded, fertilized and mulched. Disturbed areas will be stabilized, either temporarily or permanently as soon as possible, but no later than 14 days after completion of construction activities at that area.

### **3.3 STORMWATER MANAGEMENT CONTROLS**

## **SECTION THREE**

## **Stormwater Management Controls**

The wall construction activities will not result in runoff flows that are higher than pre-construction levels. Therefore, long-term stormwater management controls for this project are not warranted, nor are any such controls included as part of this SWPPP.

### **3.4 OTHER WASTES**

Any solid waste materials excavated during the construction process will be collected and stored in securely lidded metal drums or roll-off containers provided by a licensed waste management company under contract to Solutia. The containers will meet local and state waste management regulations. Solid wastes include metal objects, pipe, rebar and concrete, and does not include soil that can be reused as backfill.

Concrete pavement from Riverview Avenue may be disposed in the temporary stockpile or hauled off to a construction demolition landfill.

Trash and construction debris from the site will be deposited in a separate suitable container. The trash and debris will be hauled to an approved landfill. No construction waste material will be buried onsite.

Any liquid wastes that show up in the excavated material may be mixed as part of the slurry and deposited back into the trench as part of the barrier wall.

Personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and the site operations manager will be responsible for seeing that these procedures are followed.

All excess contact stormwater shall be pumped to the Stormwater Treatment System provided by Solutia. The site operations manager will be responsible for seeing that these practices are followed.

All sanitary waste will be regularly collected from the portable units by a licensed sanitary waste management contractor.

### **3.5 OFF-SITE VEHICLE TRACKING**

Access to the site is via paved roads. A stabilized construction entrance/exit will be required. All construction equipment will be decontaminated by means of a high-pressure water wash to obtain a visibly clean condition prior to exiting the site.

## **SECTION THREE**

## **Stormwater Management Controls**

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### **3.6 DUST SUPPRESSION**

Water sprays will be used to control dust during extended dry periods. Chemical dust suppressants shall not be used.

## SECTION FOUR

## Maintenance

Stabilization practices will include stabilization of access, staging and parking areas. Graded surfaces will be seeded and fertilized.

Structural practices will include filter fabric fencing, and temporary swales. Filter fabric fences will be installed at the bottom of long graded slopes.

To maintain the above practices, the following will be performed:

- ◆ Maintenance and repairs will be conducted with inspection report (see Section 5).
- ◆ Sediment will be removed from behind the sediment traps when it becomes greater than 1/3 the height of the sediment container. Sediment shall be managed as required by its water content. If considered stormwater, then sediment shall be placed in the temporary stockpile.
- ◆ Conveyance structures shall be maintained so as to be in the design condition. Velocity attenuating channels shall provide vegetative or other means as designed to accomplish the desired result. Foreign debris, rocks and lawn cuttings shall not be allowed to accumulate in drainage ditches.
- ◆ Permanent seeding shall be inspected weekly and if establishment for bare spots and areas of insufficient germination or growth action shall be taken to establish a stabilized surface in these areas once it is determined.
- ◆ The street entrance to the access drive shall be kept free of dust, and debris.

## **SECTION FIVE**

### **Training**

Periodic training of all employees at all levels of responsibility will be conducted to assure compliance with the requirements of this SWPPP. Training topics will include spill response, materials/equipment handling procedures, and good housekeeping strategies. Additional discussion topics will include maintenance and inspection procedures for the stormwater erosion control structures.

## **SECTION SIX**

## **Inspections**

The Contractor will designate a qualified person or persons to perform the following inspections:

- ◆ Disturbed areas and areas used for storage or materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants entering the drainage system.
- ◆ Erosion and sediment control measures identified in the plan will be observed to ensure that they are operating correctly.
- ◆ Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.
- ◆ Locations where vehicles enter or exit the site will be inspected for evidence of offsite sediment tracking.

The inspection will be conducted by the site operations manager at least once every seven calendar days and within 24-hours after a storm of 0.5 inch or greater until the area is stabilized. After that portion of the site is finally stabilized, inspection will be conducted at least once every month until the stormwater permit is terminated.

Based on the results of the inspection, the site description and control measures of this SWPPP will be revised as appropriate, but in no case later than seven calendar days following the inspection.

A report summarizing the scope of the inspection, name and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the SWPPP, and actions taken in accordance with the above will be made and retained as part of the SWPPP for at least three years from the date that the site is finally stabilized. The report will be signed in accordance with the General Permit.

Copies of the forms to be used for the Inspection and Maintenance Report are included in Appendix D of this SWPPP.

## **SECTION SEVEN**

## **Non-Stormwater Discharges**

### **7.1 INVENTORY FOR POLLUTION PREVENTION PLAN**

The following substances are expected to be present onsite during construction and have the potential for polluting stormwater:

- ◆ Fuels
- ◆ Lubricants
- ◆ Fertilizer
- ◆ Bentonite
- ◆ Attapulgite, a clay material
- ◆ Clayey borrow
- ◆ Cement

### **7.2 SPILL PREVENTION**

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of the materials and substances described above to stormwater runoff.

#### **7.2.1 Good Housekeeping**

The following good housekeeping practices will be followed onsite during the construction project.

- ◆ An effort will be made to store only enough product required to do the job.
- ◆ All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers, and, if possible, under a roof or other enclosure.
- ◆ Products will be kept in their original containers with the original manufacturer's label.
- ◆ Substances will not be mixed with one another unless recommended by the manufacturer.
- ◆ Whenever possible, all of a product will be used before disposing of the container.
- ◆ Manufacturer's recommendations for proper use and disposal will be followed.
- ◆ The site superintendent will inspect daily to ensure proper use and disposal of materials onsite.



## **SECTION SEVEN**

## **Non-Stormwater Discharges**

### **7.2.2 Hazardous Products**

These practices will be used to reduce the risks associated with hazardous material, if hazardous materials are used.

- ◆ Products will be kept in the original containers unless they are not resealable.
- ◆ Original labels and material safety data will be retained.
- ◆ Fuels will be stored in double walled tanks with less than 1,000 gallon capacity.
- ◆ If surplus product must be disposed of, manufacturer's or local and State recommended methods for proper disposal will be followed.

### **7.2.3 Product Specific Practices**

The product specific practices to be followed are provided in Appendix E.

### **7.2.4 Spill Prevention Practices**

The spill prevention practices to be followed are provided in Appendix E.

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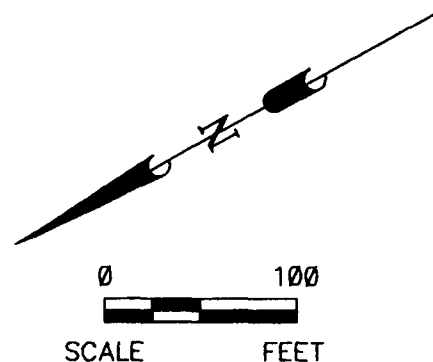
**Figures**

Figure 1      SWPPP Site Plan

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5+00	702134.447	2290657.768
8+80	702321.242	2290326.812
10+04	702416.666	2290247.607
11+12	702499.567	2290178.799
16+88	703013.517	2290440.687
17+61	703072.250	2290483.864
18+75	703176.360	2290529.570
22+77	703575.908	2290573.447
23+89	703671.305	2290632.462
26+96	703958.352	2290739.401
31+05	704315.560	2290939.848
31+43	704295.437	2290975.765
37+93	703979.414	2291539.826

7) EROSION AND SEDIMENT CONTROLS SHOWN FOR INITIAL STAG OF CONSTRUCTION. ADDITIONAL FEATURES SHALL BE ADDED AS WORK PROGRESSES



GROUNDWATER MIGRATION CONTROL SYSTEM	PROJECT NO.
BARRIER WALL	21561326.00001
SWPPP-SITE PLAN	FIGURE NO. 1

## Figures

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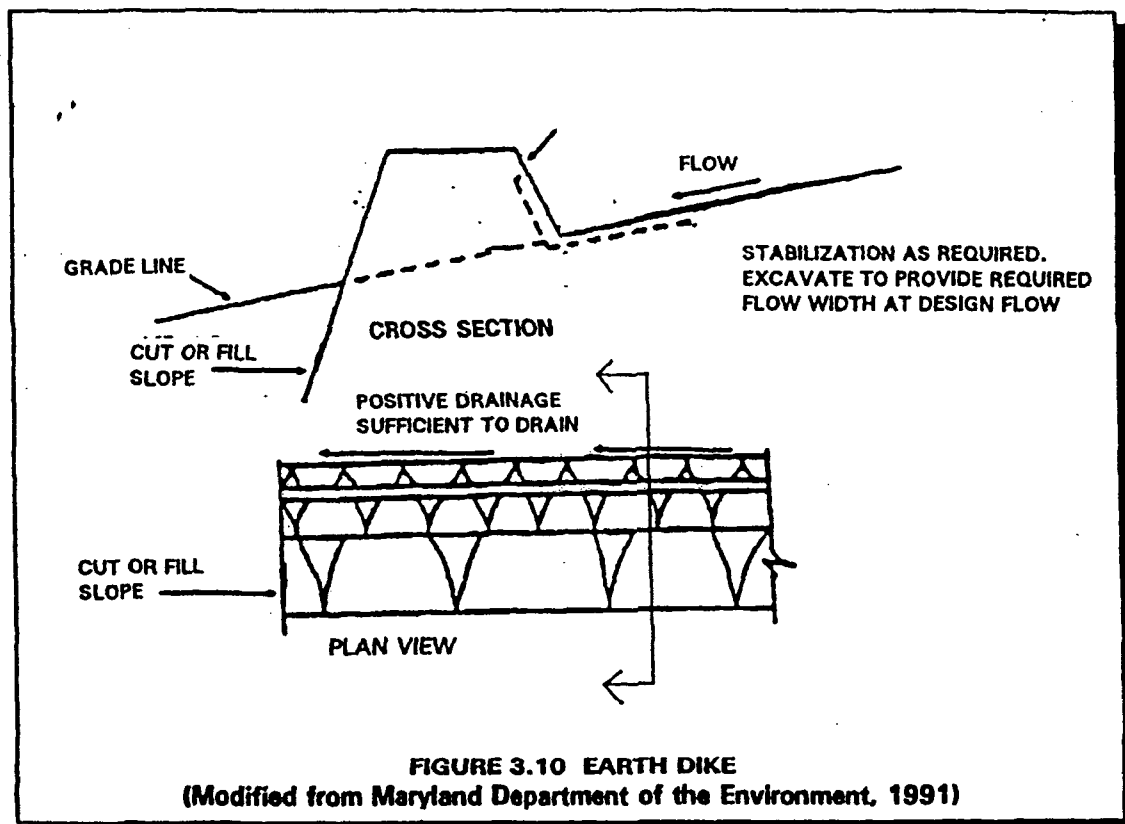
Figure 2      Details (from: Storm Water Management for Construction Activities, EPA, 1992)

- Earth Dike
- Drainage Swale
- Interceptor Dikes and Swales
- Temporary Stream Crossing
- Temporary Storm Drain Diversion
- Pipe Slope Drains
- Silt Fence
- Gravel or Stone Filter Berm
- Sediment Trap
- Temporary Sediment Basin
- Check Dams
- Stabilized Construction Entrance

## Earth Dike

### What Is It

An earth dike is a ridge or ridge and channel combination used to protect work areas from upslope runoff and to divert sediment-laden water to appropriate traps or stable outlets. The dike consists of compacted soil and stone, riprap, or vegetation to stabilize the channel.



### When and Where to Use It

Earth dikes are used in construction areas to control erosion, sedimentation, or flood damage. Earth dikes can be used in the following situations:

- Above disturbed existing slopes and above cut or fill slopes to prevent runoff over the slope
- Across unprotected slopes, as slope breaks, to reduce slope length
- Below slopes to divert excess runoff to stabilized outlets
- To divert sediment laden water to sediment traps
- At or near the perimeter of the construction area to keep sediment from leaving the site

- Above disturbed areas before stabilization to prevent erosion and maintain acceptable working conditions
- Temporary diversions may also serve as sediment traps when the site has been overexcavated on a flat grade or in conjunction with a sediment fence.

<b>What to Consider</b>
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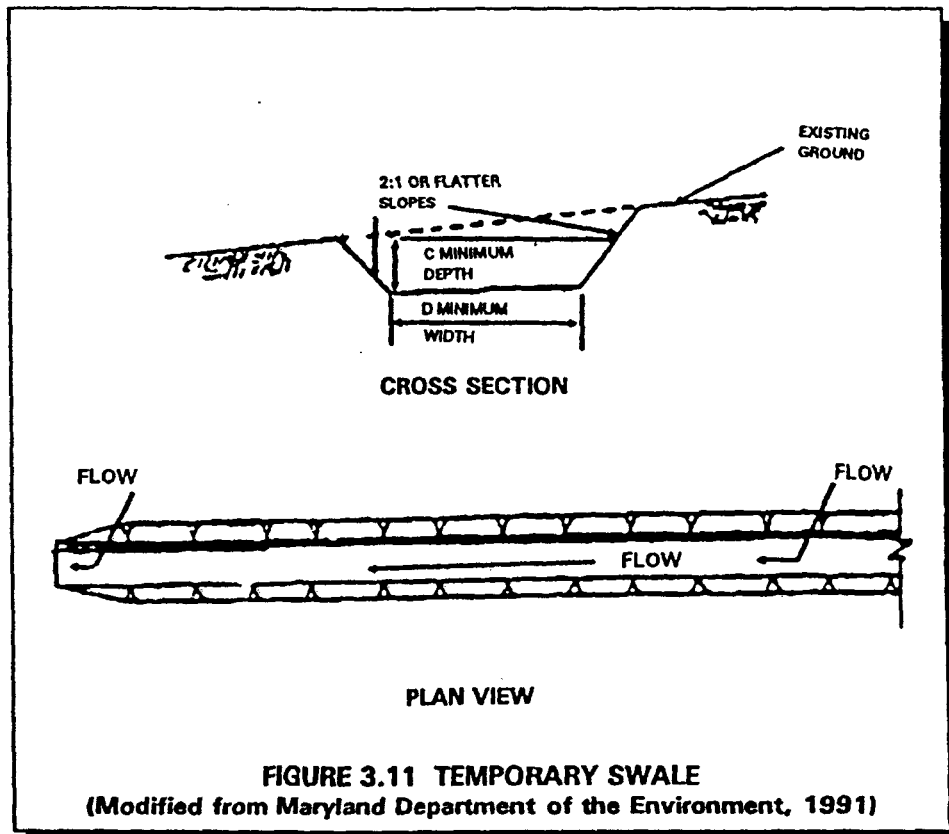
Despite an earth dike's simplicity, improper design can limit its effectiveness; therefore, the State or local requirements should be consulted. Some general considerations include proper compaction of the earth dike, appropriate location to divert the intercepted runoff, and properly designed ridge height and thicknesses. Earth dikes should be constructed along a positive grade. There should be no dips or low points in an earth dike where the storm water will collect (other than the discharge point). Also, the intercepted runoff from disturbed areas should be diverted to a sediment-trapping device. Runoff from undisturbed areas can be channeled to an existing swale or to a level spreader. Stabilization for the dike and flow channel of the drainage swale should be accomplished as soon as possible. Stabilization materials can include vegetation or stone/riprap.

Advantages of an Earth Dike
<ul style="list-style-type: none"><li>• Can be constructed from materials and equipment which are typically already present on a construction site</li></ul>
Disadvantages of an Earth Dike
<ul style="list-style-type: none"><li>• Frequent inspection and maintenance required</li></ul>

## Drainage Swale

### What Is It

A drainage swale is a channel with a lining of vegetation, riprap, asphalt, concrete, or other material. It is constructed by excavating a channel and applying the appropriate stabilization.



### When and Where to Use It

A drainage swale applies when runoff is to be conveyed without causing erosion. Drainage swales can be used to convey runoff from the bottom or top of a slope. Drainage swales accomplish this by intercepting and diverting the flow to a suitable outlet. For swales draining a disturbed area, the outlet can be to a sediment trapping device prior to its release.

### What to Consider

Since design flows, channel linings, and appropriate outlet devices will need to be considered, consult your State's requirements on such erosion control measures prior to constructing a drainage swale. General considerations include:

- Divert the intercepted runoff to an appropriate outlet.

- The swale should be lined using geotextiles, grass, sod, riprap, asphalt, or concrete. The selection of the liner is dependent upon the volume and the velocity of the anticipated runoff.
- The swale should have a positive grade. There should be no dips or low points in the swale where storm water will collect.

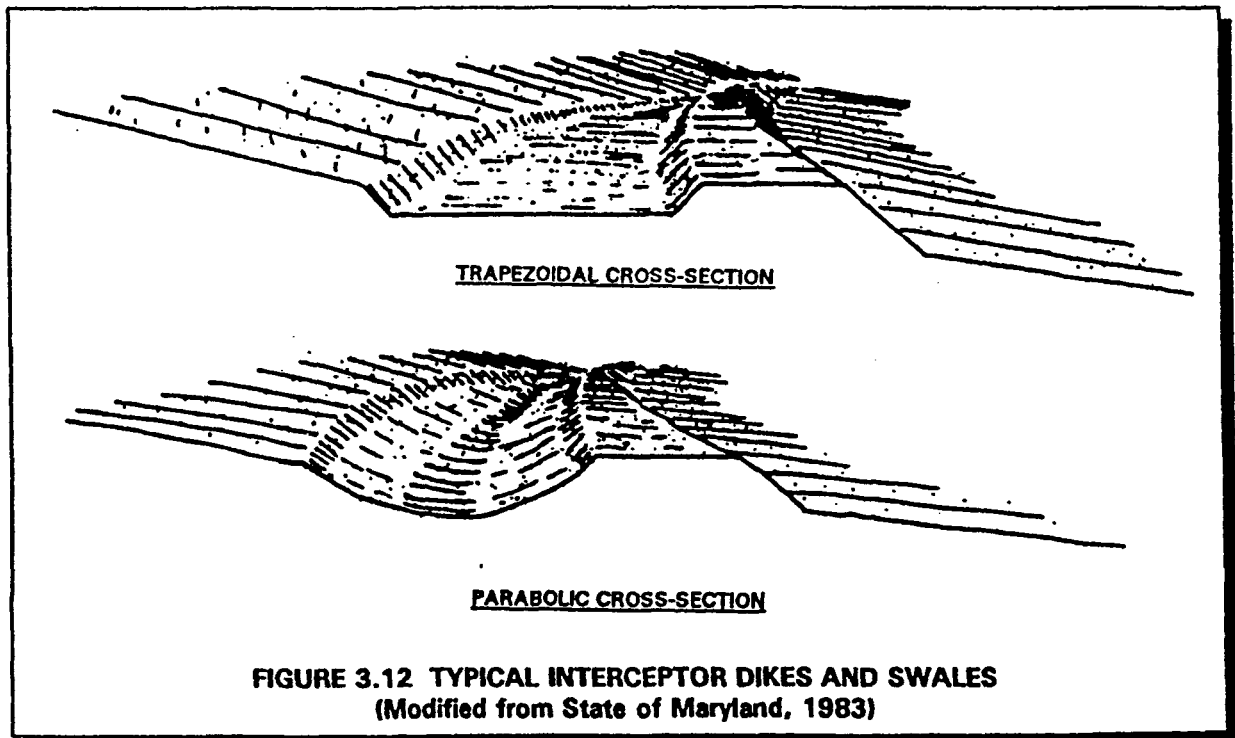
<b>Advantages of a Drainage Swale</b>
<ul style="list-style-type: none"><li>• Excavation of swale can be easily performed with earth moving equipment</li><li>• Can transport large volumes of runoff</li></ul>
<b>Disadvantages of a Drainage Swale</b>
<ul style="list-style-type: none"><li>• Stabilization and design costs can make construction expensive</li><li>• Use is restricted to areas with relatively flat slopes</li></ul>



## Interceptor Dikes and Swales

### What Are They

Interceptor dikes (ridges of compacted soil) and swales (excavated depressions) are used to keep upslope runoff from crossing areas where there is a high risk of erosion. They reduce the amount and speed of flow and then guide it to a stabilized outfall (point of discharge) or sediment trapping area (see sections on Sediment Traps and Temporary Sediment Basins). Interceptor dikes and swales divert runoff using a combination of earth dike and vegetated swale. Runoff is channeled away from locations where there is a high risk of erosion by placing a diversion dike or swale at the top of a sloping disturbed area. Dikes and swales also collect overland flow, changing it into concentrated flows. Interceptor dikes and swales can be either temporary or permanent storm water control structures.



### When and Where to Use Them

Interceptor dikes and swales are generally built around the perimeter of a construction site before any major soil disturbing activity takes place. Temporary dikes or swales may also be used to protect existing buildings; areas, such as stockpiles; or other small areas that have not yet been fully stabilized. When constructed along the upslope perimeter of a disturbed or high-risk area (though not necessarily all the way around it), dikes or swales prevent runoff from uphill areas from crossing the unprotected slope. Temporary dikes or swales constructed on the down slope side of the disturbed or high-risk area will prevent runoff that contains sediment from leaving the site before sediment is removed. For short slopes, a dike or swale at the top of the slope reduces the

amount of runoff reaching the disturbed area. For longer slopes, several dikes or swales are placed across the slope at intervals. This practice reduces the amount of runoff that accumulates on the face of the slope and carries the runoff safely down the slope. In all cases, runoff is guided to a sediment trapping area or a stabilized outfall before release.

<b>What to Consider</b>
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Temporary dikes and swales are used in areas of overland flow; if they remain in place longer than 15 days, they should be stabilized. Runoff channeled by a dike or swale should be directed to an adequate sediment trapping area or stabilized outfall. Care should be taken to provide enough slope for drainage but not too much slope to cause erosion due to high runoff flow speed. Temporary interceptor dikes and swales may remain in place as long as 12 to 18 months (with proper stabilization) or be rebuilt at the end of each day's activities. Dikes or swales should remain in place until the area they were built to protect is permanently stabilized. Interceptor dikes and swales can be permanent controls. However, permanent controls: should be designed to handle runoff after construction is complete; should be permanently stabilized; and should be inspected and maintained on a regular basis. Temporary and permanent control measures should be inspected once each week on a regular schedule and after every storm. Repairs necessary to the dike and flow channel should be made promptly.

Advantages of Interceptor Dikes and Swales
<ul style="list-style-type: none"><li>• Are simple and effective for channeling runoff away from areas subject to erosion</li><li>• Can handle flows from large drainage areas</li><li>• Are inexpensive because they use materials and equipment normally found onsite</li></ul>
Disadvantages of Interceptor Dikes and Swales
<ul style="list-style-type: none"><li>• If constructed improperly, can cause erosion and sediment transport since flows are concentrated</li><li>• May cause problems to vegetation growth if water flow is too fast</li><li>• Require additional maintenance, inspections, and repairs</li></ul>

## Temporary Stream Crossing

### What Is It

A temporary stream crossing is a bridge or culvert across a stream or watercourse for short-term use by construction vehicles or heavy equipment. Vehicles moving over unprotected stream banks will damage the bank, thereby releasing sediments and degrading the stream bank. A stream crossing provides a means for construction vehicles to cross streams or watercourses without moving sediment to streams, damaging the streambed or channel, or causing flooding.

### When and Where to Use It

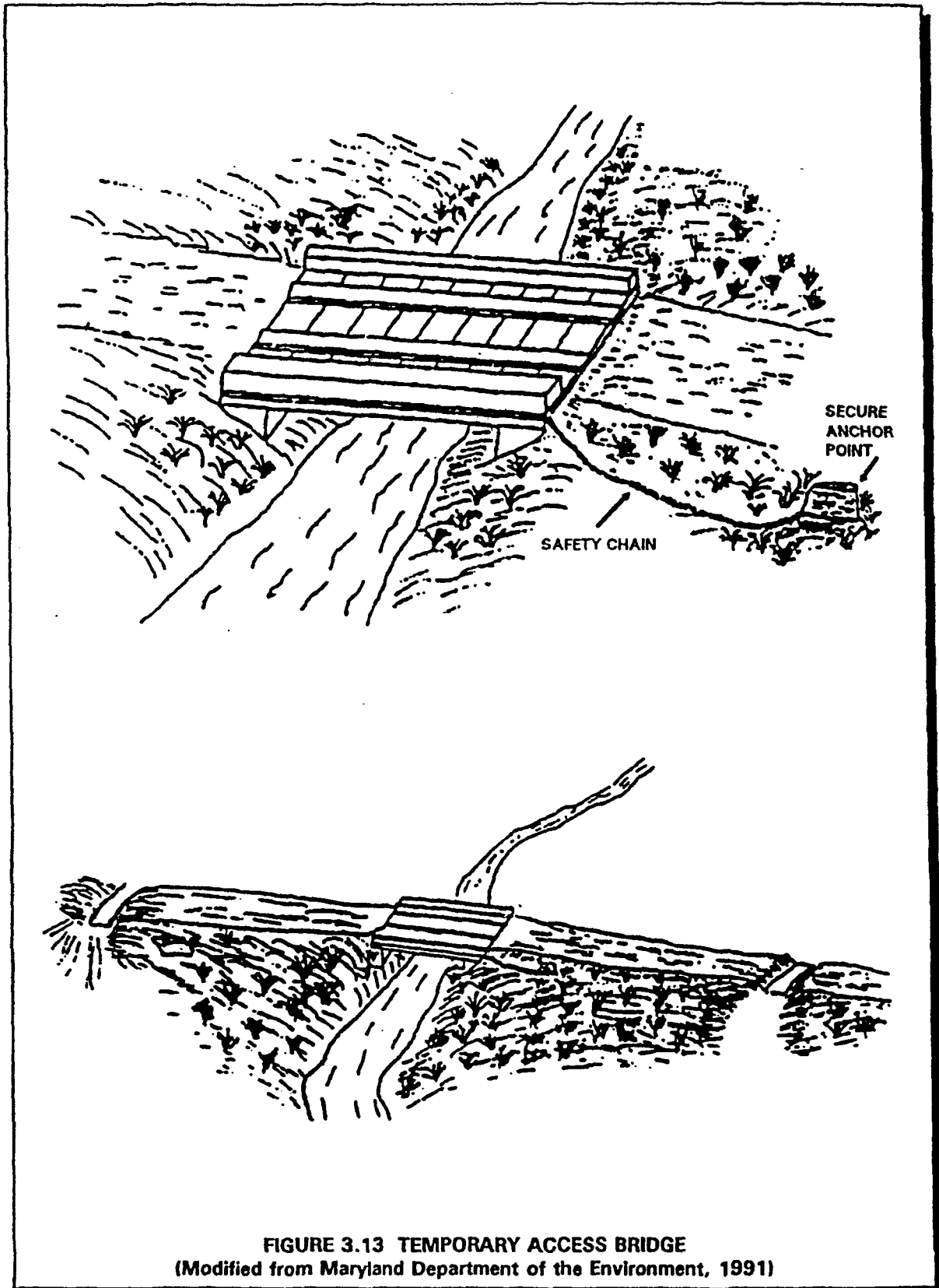
A temporary stream crossing is used when heavy equipment should be moved from one side of a stream channel to another, or where light-duty construction vehicles have to cross the stream channel frequently for a short period of time. Temporary stream crossings should be constructed only when it is necessary to cross a stream and a permanent crossing is not yet constructed.

- **Bridges**—Where available materials and designs are adequate to bear the expected loadings, bridges are preferred as a temporary stream crossing.
- **Culverts**—Culverts are the most common type of stream crossings and are relatively easy to construct. A pipe, which is to carry the flow, is laid into the channel and covered by gravel.

### What to Consider

When feasible, one should always attempt to minimize or eliminate the need to cross streams. Temporary stream crossings are a direct source of pollution; therefore, every effort should be made to use an alternate method (e.g., longer detour), when feasible. When it becomes necessary to cross a stream, a well planned approach will minimize the damage to the stream bank and reduce erosion. The design of temporary stream crossings requires knowledge of the design flows and other information; therefore, a professional engineer and specific State and local requirements should be consulted. State/local jurisdictions may require a separate permit for temporary stream crossings; contact them directly to learn about their exact requirements.

The specific loads and the stream conditions will dictate what type of stream crossing to employ. Bridges are the preferred method to cross a stream as they provide the least obstruction to flows and fish migration.



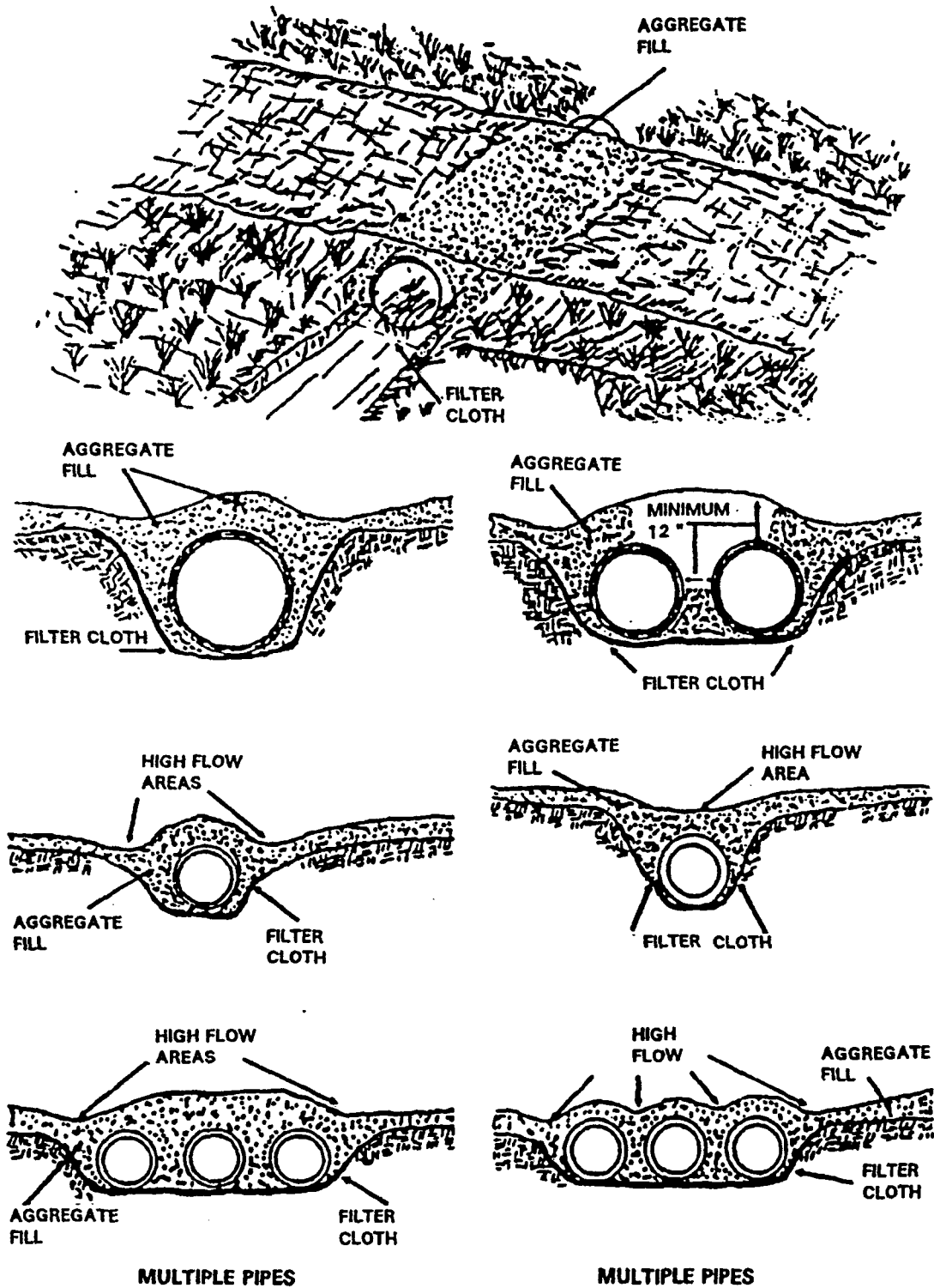


FIGURE 3.14 TEMPORARY ACCESS CULVERT  
(Modified from Maryland Department of the Environment, 1991)

<b>Advantages of a Temporary Stream Crossing</b>
<ul style="list-style-type: none"><li>• Bridges provide the least obstruction to flow and fish migration and the construction material can be salvaged</li><li>• Culverts are inexpensive and easily installed structures</li></ul>
<b>Disadvantages of a Temporary Stream Crossing</b>
<ul style="list-style-type: none"><li>• Bridges are expensive to design and install</li><li>• Culverts cause greater disturbances during installation and removal</li></ul>

### Temporary Storm Drain Diversion

#### What Is It

A temporary storm drain is a pipe which redirects an existing storm drain system or outfall channel to discharge into a sediment trap or basin.

#### When and Where to Use It

Use storm drain diversions to temporarily divert flow going to a permanent outfall. This diverted flow should be directed to a sediment-trapping device. A temporary storm drain diversion should remain in place as long as the area draining to the storm sewer remains disturbed. Another method is to delay completion of the permanent outfall and instead using temporary diversions to a sediment trapping device before discharge. Finally, a sediment trap or basin can be constructed below a permanent storm drain outfall. The basin would be designed to trap any sediment before final discharge.

#### What to Consider

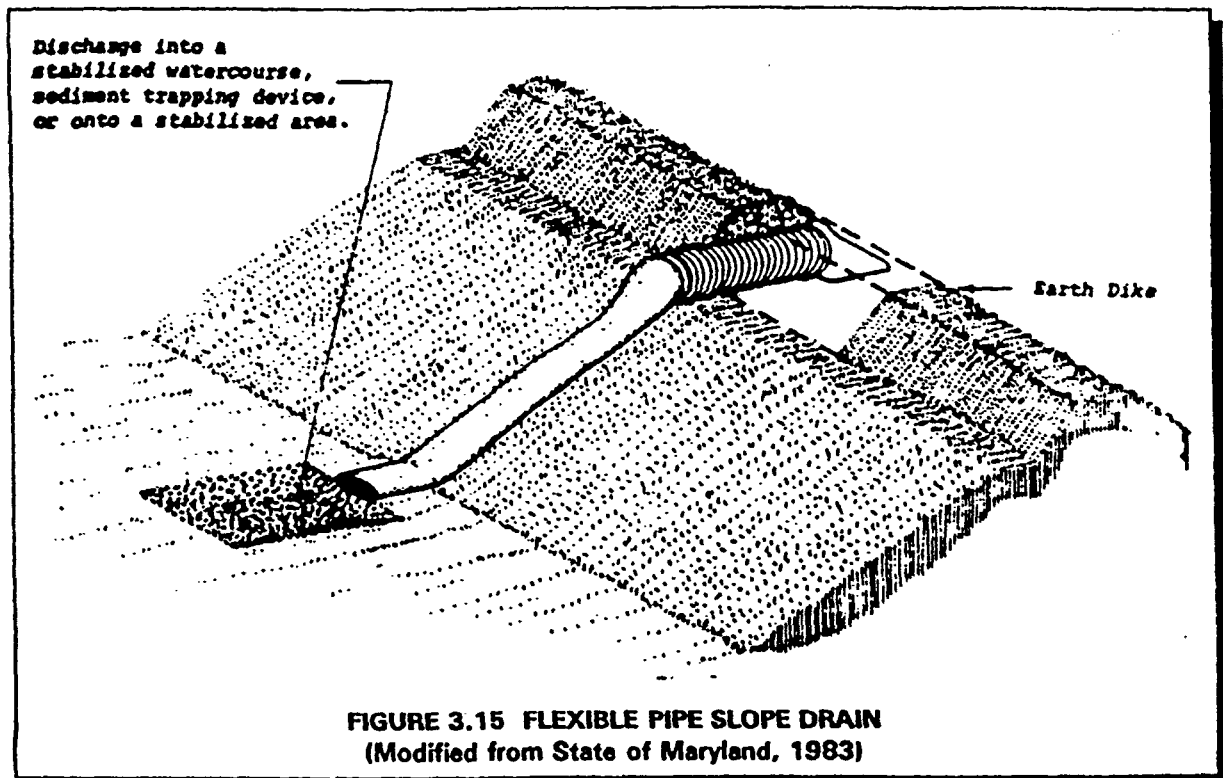
Since the existing storm draining systems will be modified, careful consideration to piping configuration and resulting impact of installing a temporary storm drain diversion should be given. The temporary diversions will also need to be moved, once the construction has ceased and it is necessary to restore the original storm drainage systems. Therefore, appropriate restoration measures such as flushing the storm drain prior to removal of the sediment trap or basin, stabilizing the outfall, restoration of grade areas, etc. should be taken. And finally, the State or local requirements should be consulted for detailed requirements.

Advantages of a Temporary Storm Drain Diversion
<ul style="list-style-type: none"><li>• Requires little maintenance once installed</li></ul>
Disadvantages of a Temporary Storm Drain Diversion
<ul style="list-style-type: none"><li>• Disturbs existing storm drainage patterns</li></ul>

## Pipe Slope Drains

### What Are They

Pipe slope drains reduce the risk of erosion by discharging runoff to stabilized areas. Made of flexible or rigid pipe, they carry concentrated runoff from the top to the bottom of a slope that has already been damaged by erosion or is at high risk for erosion. They are also used to drain saturated slopes that have the potential for soil slides. Pipe slope drains can be either temporary or permanent depending on the method of installation and material used.



### When and Where to Use Them

Pipe slope drains are used whenever it is necessary to convey water down a slope without causing erosion. They are especially effective before a slope has been stabilized or before permanent drainage structures are ready for use. Pipe slope drains may be used with other devices, including diversion dikes or swales, sediment traps, and level spreaders (used to spread out storm water runoff uniformly over the surface of the ground). Temporary pipe slope drains, usually flexible tubing or conduit, may be installed prior to the construction of permanent drainage structures. Permanent slope drains may be placed on or beneath the ground surface; pipes, sectional downdrains, paved chutes, or clay tiles may be used.



Paved chutes may be covered with a surface of concrete or other impenetrable material. Subsurface drains can be constructed of concrete, PVC, clay tile, corrugated metal, or other permanent material.

#### What to Consider

The drain design should be able to handle the volume of flow. The inlets and outlets of a pipe slope drain should be stabilized. This means that a flared end section should be used at the entrance of the pipe. The soil around the pipe entrance should be fully compacted. The soil at the discharge end of the pipe should be stabilized with riprap (a combination of large stones, cobbles, and boulders). The riprap should be placed along the bottom of a swale which leads to a sediment trapping structure or another stabilized area.

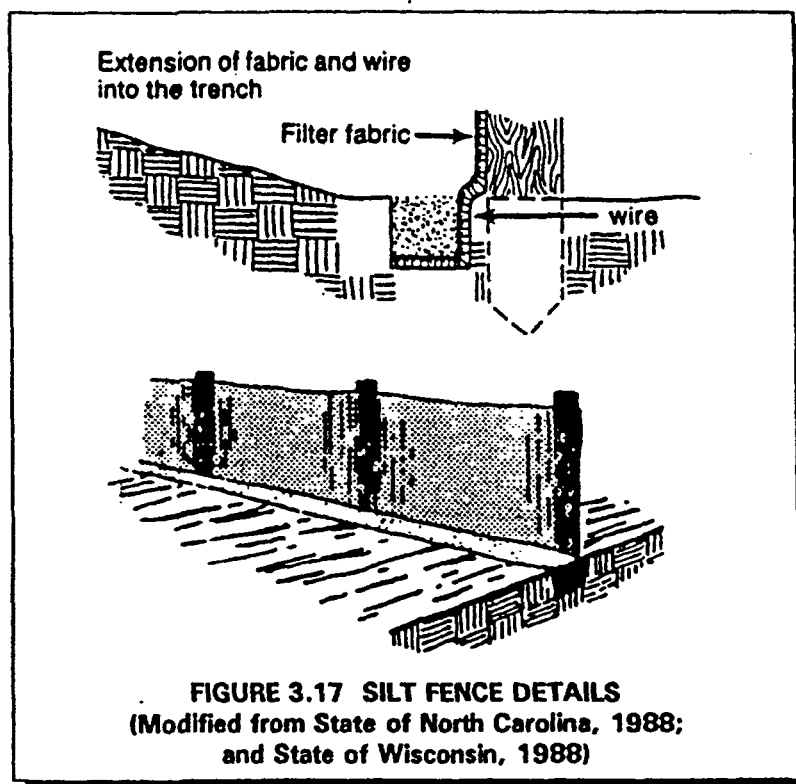
Pipe slope drains should be inspected on a regular schedule and after any major storm. Be sure that the inlet from the pipe is properly installed to prevent bypassing the inlet and undercutting the structure. If necessary, install a headwall, riprap, or sandbags around the inlet. Check the outlet point for erosion and check the pipe for breaks or clogs. Install outlet protection if needed and promptly clear breaks and clogs.

Advantages of Pipe Slope Drains
<ul style="list-style-type: none"><li>• Can reduce or eliminate erosion by transporting runoff down steep slopes or by draining saturated soils</li><li>• Are easy to install and require little maintenance</li></ul>
Disadvantages of Pipe Slope Drains
<ul style="list-style-type: none"><li>• Require that the area disturbed by the installation of the drain should be stabilized or it, too, will be subject to erosion</li><li>• May clog during a large storm</li></ul>

## Silt Fence

### What Is It

A silt fence, also called a "filter fence," is a temporary measure for sedimentation control. It usually consists of posts with filter fabric stretched across the posts and sometimes with a wire support fence. The lower edge of the fence is vertically trenched and covered by backfill. A silt fence is used in small drainage areas to detain sediment. These fences are most effective where there is overland flow (runoff that flows over the surface of the ground as a thin, even layer) or in minor swales or drainageways. They prevent sediment from entering receiving waters. Silt fences are also used to catch wind blown sand and to create an anchor for sand dune creation. Aside from the traditional wooden post and filter fabric method, there are several variations of silt fence installation including silt fence which can be purchased with pockets pre sewn to accept use of steel fence posts.



### When and Where to Use It

A silt fence should be installed prior to major soil disturbance in the drainage area. The fence should be placed across the bottom of a slope along a line of uniform elevation (perpendicular to the direction of flow). It can be used at the outer boundary of the work area. However, the fence does not have to surround the work area completely. In addition, a silt fence is effective where sheet and rill erosion may be a problem. Silt fences should not be constructed in streams or swales.

**What to Consider**

A silt fence is not appropriate for controlling runoff from a large area. This type of fence can be more effective than a straw bale barrier if properly installed and maintained. It may be used in combination with other erosion and sediment practices.

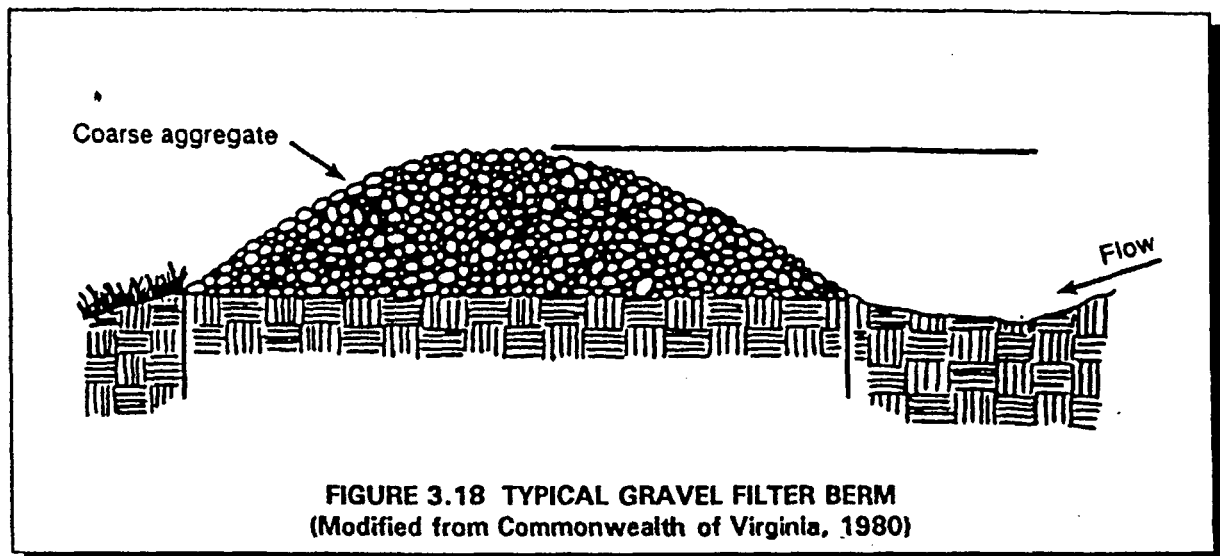
The effective life span for a silt fence depends upon the material of construction and maintenance. The fence requires frequent inspection and prompt maintenance to maintain its effectiveness. Inspect the fence after each rainfall. Check for areas where runoff eroded a channel beneath the fence, or where the fence was caused to sag or collapse by runoff flowing over the top. Remove and properly dispose of sediment when it is one-third to one-half the height of the fence or after each storm.

Advantages of a Silt Fence
<ul style="list-style-type: none"><li>• Removes sediments and prevents downstream damage from sediment deposits</li><li>• Reduces the speed of runoff flow</li><li>• Minimal clearing and grubbing required for installation</li><li>• Inexpensive</li></ul>
Disadvantages of a Silt Fence
<ul style="list-style-type: none"><li>• May result in failure from improper choice of pore size in the filter fabric or improper installation</li><li>• Should not be used in streams</li><li>• Is only appropriate for small drainage areas with overland flow</li><li>• Frequent inspection and maintenance is necessary to ensure effectiveness</li></ul>

### Gravel or Stone Filter Berm

#### What Is It

A gravel or stone filter berm is a temporary ridge constructed of loose gravel, stone, or crushed rock. It slows and filters flow, diverting it from an exposed traffic area. Diversions constructed of compacted soil may be used where there will be little or no construction traffic within the right-of-way. They are also used for directing runoff from the right-of-way to a stabilized outlet.



#### When and Where to Use It

This method is appropriate where roads and other rights-of-way under construction should accommodate vehicular traffic. Berms are meant for use in areas with gentle slopes. They may also be used at traffic areas within the construction site.

#### What to Consider

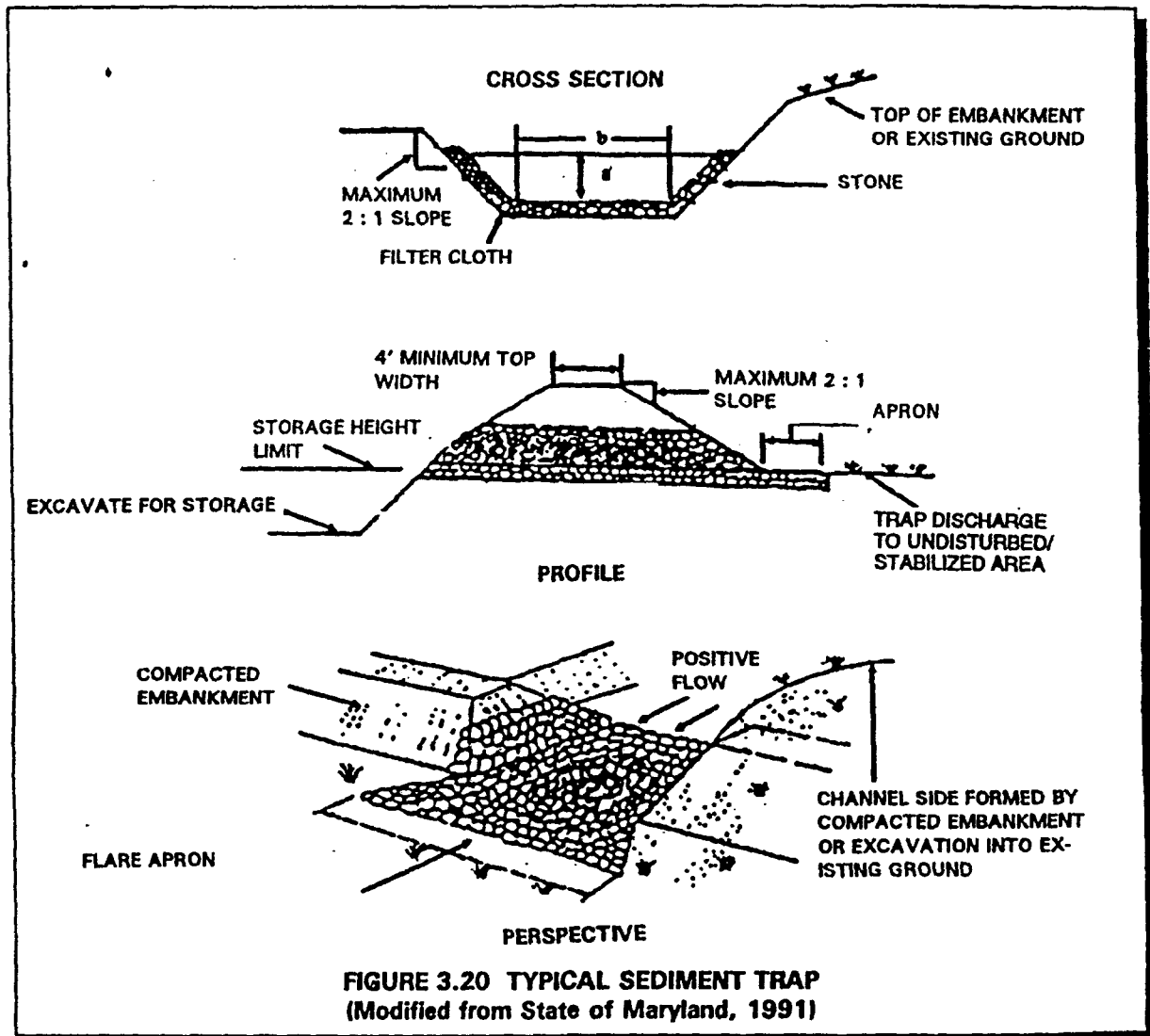
Berm material should be well graded gravel or crushed rock. The spacing of the berms will depend on the steepness of the slope: berms should be placed closer together as the slope increases. The diversion should be inspected regularly after each rainfall, or if breached by construction or other vehicles. All needed repairs should be performed immediately. Accumulated sediment should be removed and properly disposed of and the filter material replaced, as necessary.

<b>Advantages of a Gravel or Stone Filter Berm</b>
<ul style="list-style-type: none"><li>• Is a very efficient method of sediment control</li><li>• Reduces the speed of runoff flow</li></ul>
<b>Disadvantages of a Gravel or Stone Filter Berm</b>
<ul style="list-style-type: none"><li>• Is more expensive than methods that use onsite materials</li><li>• Has a very limited life span</li><li>• Can be difficult to maintain because of clogging from mud and soil on vehicle tires</li></ul>

## Sediment Trap

### What Is It

A sediment trap is formed by excavating a pond or by placing an earthen embankment across a low area or drainage swale. An outlet or spillway is constructed using large stones or aggregate to slow the release of runoff. The trap retains the runoff long enough to allow most of the silt to settle out.



#### When and Where to Use It

A temporary sediment trap may be used in conjunction with other temporary measures, such as gravel construction entrances, vehicle wash areas, slope drains, diversion dikes and swales, or diversion channels.

#### What to Consider

Sediment traps are suitable for small drainage areas, usually no more than 10 acres. The trap should be large enough to allow the sediments to settle and should have a capacity to store the collected sediment until it is removed. The volume of storage required depends upon the amount and intensity of expected rainfall and on estimated quantities of sediment in the storm water runoff. Check your Permit to see if it specifies a minimum storage volume for sediment traps.

The effective life of a sediment trap depends upon adequate maintenance. The trap should be readily accessible for periodic maintenance and sediment removal. Traps should be inspected after each rainfall and cleaned when no more than half the design volume has been filled with collected sediment. The trap should remain in operation and be properly maintained until the site area is permanently stabilized by vegetation and/or when permanent structures are in place.

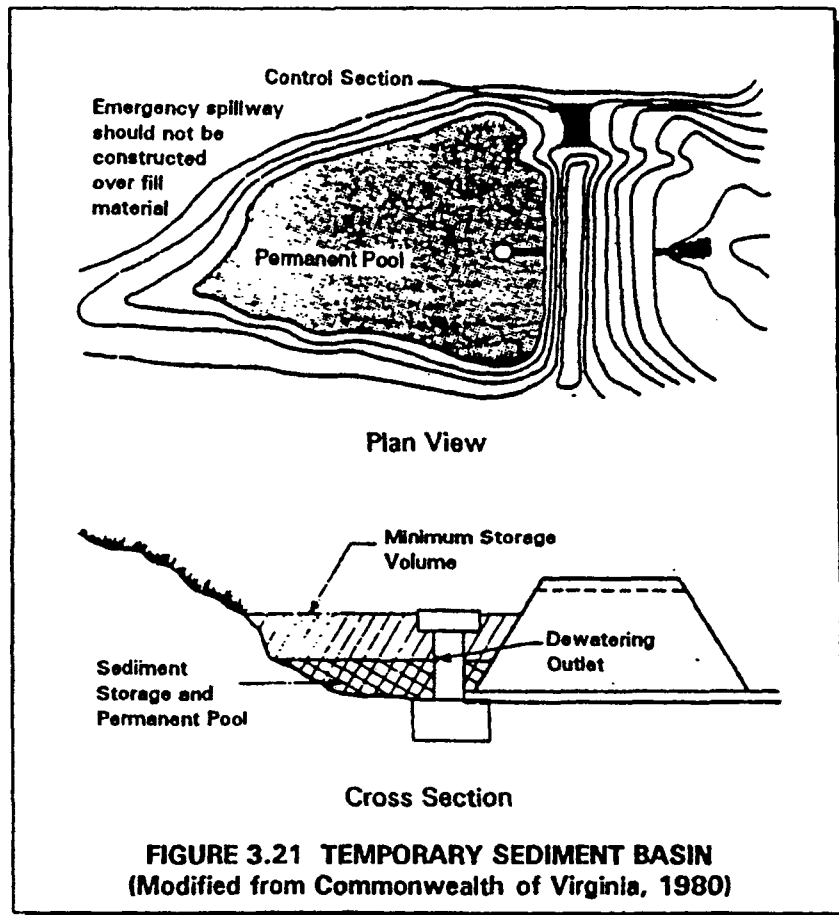
Advantages of a Temporary Sediment Trap
<ul style="list-style-type: none"><li>• Protects downstream areas from clogging or damage due to sediment deposits</li><li>• Is inexpensive and simple to install</li><li>• Can simplify the design process by trapping sediment at specific spots onsite</li></ul>
Disadvantages of a Temporary Sediment Trap
<ul style="list-style-type: none"><li>• Is suitable only for a limited area</li><li>• Is effective only if properly maintained</li><li>• Will not remove very fine silts and clays</li></ul>

### Temporary Sediment Basin

#### What Is It

A temporary sediment basin is a settling pond with a controlled storm water release structure used to collect and store sediment produced by construction activities. A sediment basin can be constructed by excavation and/or by placing an earthen embankment across a low area or drainage swale. Sediment basins can be designed to maintain a permanent pool or to drain completely dry. The basin detains sediment-laden runoff from larger drainage areas long enough to allow most of the sediment to settle out.

The pond has a riser and pipe outlet with a gravel outlet or spillway to slow the release of runoff and provide some sediment filtration. By removing sediment, the basin helps prevent clogging of offsite conveyance systems and sediment-loading of receiving waterways. In this way, the basin helps prevent destruction of waterway habitats.





#### **When and Where to Use It**

A temporary sediment basin should be installed before clearing and grading is undertaken. It should not be built on an embankment in an active stream. The creation of a dam in such a site may result in the destruction of aquatic habitats. Dam failure can also result in flooding. A temporary sediment basin should be located only if there is sufficient space and appropriate topography. The basin should be made large enough to handle the maximum expected amount of site drainage. Fencing around the basin may be necessary for safety or vandalism reasons.

A temporary sediment basin used in combination with other control measures, such as seeding or mulching, is especially effective for removing sediments.

#### **What to Consider**

Temporary sediment basins are usually designed for disturbed areas larger than 5 acres. The pond should be large enough to hold runoff long enough for sediment to settle. Sufficient space should be allowed for collected sediments. Check the requirements of your permit to see if there is a minimum storage requirement for sediment basins. The useful life of a temporary sediment basin is dependent upon adequate maintenance.

Sediment trapping efficiency is improved by providing the maximum surface area possible. Because finer silts may not settle out completely, additional erosion control measures should be used to minimize release of fine silt. Runoff should enter the basin as far from the outlet as possible to provide maximum retention time.

Sediment basins should be readily accessible for maintenance and sediment removal. They should be inspected after each rainfall and be cleaned out when about half the volume has been filled with sediment. The sediment basin should remain in operation and be properly maintained until the site area is permanently stabilized by vegetation and/or when permanent structures are in place. The embankment forming the sedimentation pool should be well compacted and stabilized with vegetation. If the pond is located near a residential area, it is recommended for safety reasons that a sign be posted and that the area be secured by a fence. A well built temporary sediment basin that is large enough to handle the post construction runoff volume may later be converted to use as a permanent storm water management structure.

The sediment basins outlet pipe and spill way should be designed by an engineer based upon an analysis of the expected runoff flow rates from the site. Consult your state/local requirements to determine the frequency of the storm for which the outlet must be designed.

**EPA BASELINE GENERAL PERMIT REQUIREMENTS**

**Sediment Basin Requirements**

**Part IV.D.2.a.(2).(a).**

For common drainage locations that serve an area with 10 or more disturbed acres at one time, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. The 3,600 cubic feet of storage area per acre drained does not apply to flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment basin. For drainage locations which serve 10 or more disturbed acres at one time and where a temporary sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent controls is not attainable, sediment traps, silt fences, or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area.

**Advantages of a Temporary Sediment Basin**

- Protects downstream areas from clogging or damage due to sediment deposits generated during construction activities
- Can trap smaller sediment particles than sediment traps can because of the longer detention time
- Can be converted to a permanent storm water detention structure, once construction is complete

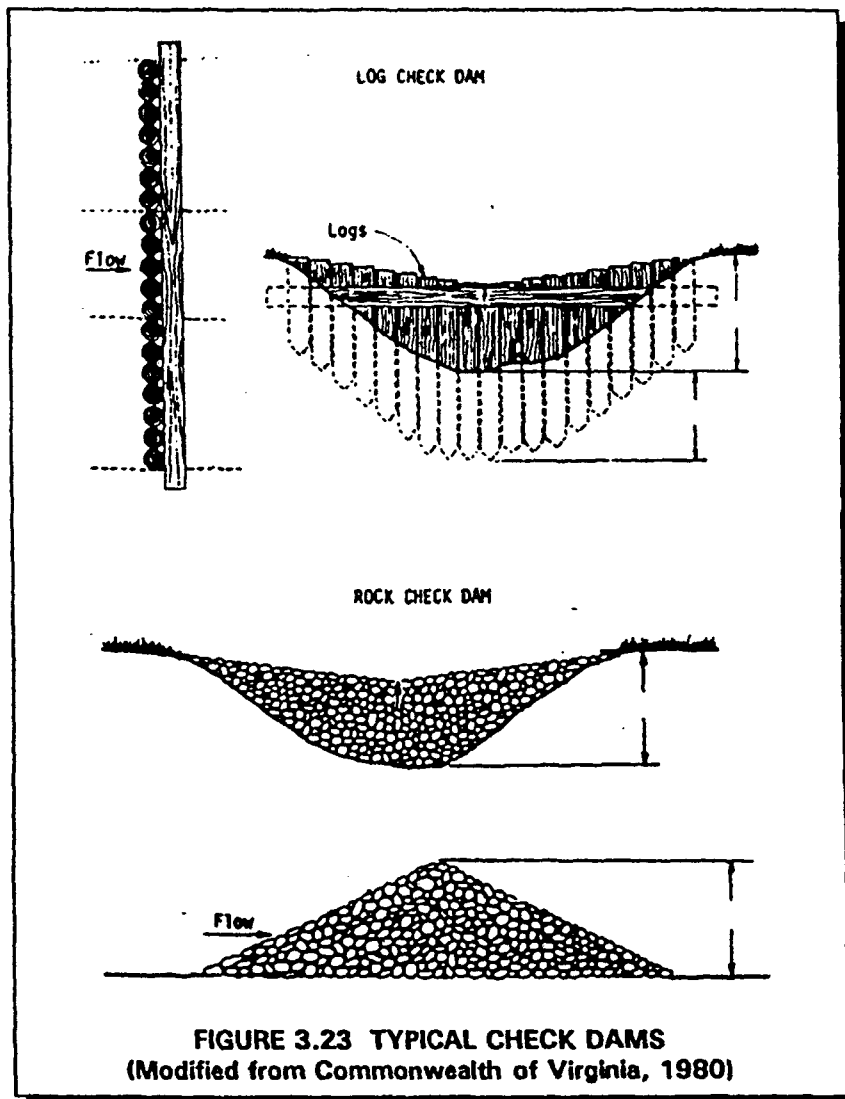
**Disadvantages of a Temporary Sediment Basin**

- Is generally suitable for small areas
- Requires regular maintenance and cleaning
- Will not remove very fine silts and clays unless used in conjunction with other measures
- Is a more expensive way to remove sediment than several other methods
- Requires careful adherence to safety practices since ponds are attractive to children

## Check Dams

### What Are They

A check dam is a small, temporary or permanent dam constructed across a drainage ditch, swale, or channel to lower the speed of concentrated flows. Reduced runoff speed reduces erosion and gullying in the channel and allows sediments to settle out.



### When and Where to Use Them

A check dam should be installed in steeply sloped swales, or in swales where adequate vegetation cannot be established. A check dam may be built from logs, stone, or pea gravel-filled sandbags.

**What to Consider**

Check dams should be used only in small open channels which will not be overtopped by flow once the dams are constructed. The dams should not be placed in streams (unless approved by appropriate State authorities). The center section of the check dam should be lower than the edges. Dams should be spaced so that the toe of the upstream dam is at the same elevation as the top of the downstream dam.

After each significant rainfall, check dams should be inspected for sediment and debris accumulation. Sediment should be removed when it reaches one half the original dam height. Check for erosion at edges and repair promptly as required. After construction is complete, all stone and riprap should be removed if vegetative erosion controls will be used as a permanent erosion control measure. It will be important to know the expected erosion rates and runoff flow rate for the swale in which this measure is to be installed. Contact the State/local storm water program agency or a licensed engineer for assistance in designing this measure.

Advantages of Check Dams
<ul style="list-style-type: none"><li>• Are inexpensive and easy to install</li><li>• May be used permanently if designed properly</li><li>• Allow a high proportion of sediment in the runoff to settle out</li><li>• Reduce velocity and may provide aeration of the water</li><li>• May be used where it is not possible to divert the flow or otherwise stabilize the channel</li></ul>
Disadvantages of Check Dams
<ul style="list-style-type: none"><li>• May kill grass linings in channels if the water level remains high after it rains or if there is significant sedimentation</li><li>• Reduce the hydraulic capacity of the channel</li><li>• May create turbulence which erodes the channel banks</li></ul>

### 4.3 MINIMIZING OFFSITE VEHICLE TRACKING OF SEDIMENTS

Day-to-day site practices can have a major impact on storm water contamination because of their potential for generating sediments. A common problem area is offsite vehicle tracking. Two practices are commonly used for minimizing offsite vehicle tracking of sediments: stabilized construction entrances and construction access road stabilization.

#### Q. What measures have you taken to prevent offsite vehicle tracking?

Controlling offsite tracking of sediments may require attention at most times when there is vehicle traffic at the construction site. The measures listed here are effective if used properly.

- A stabilized construction entrance and construction road are very effective methods for reducing offsite tracking of mud, dirt, and rocks
- Paved streets adjacent to the site should be swept to remove any excess mud, dirt, or rock tracked from the site
- Deliveries or other traffic should be scheduled at a time when you will have personnel available to provide cleanup if it is required.

#### 4.3.1 Construction Road Stabilization

##### What Is It

A stabilized construction road is a road built to provide a means for construction vehicles to move around the site without causing significant erosion. A stabilized construction road is designed to be well drained so that water does not puddle or flood the road during wet weather. It typically will have a swale along one or both sides of the road to collect and carry away runoff. Stabilized construction roads should have a layer of crushed stone or gravel which will cover and protect the soil below from erosion.

##### When and Where to Use It

A stabilized construction road should be installed in a disturbed area where there will be a high volume of construction traffic expected. A construction road should be stabilized at the beginning of construction and maintained throughout construction. Construction parking areas should be stabilized as well as the roads. A stabilized construction road should not be located in a cut or fill area until after grading has been performed.

##### What to Consider

Stabilized construction roads should be built to conform to the site grades; this will require a minimum amount of cut and fill. They should also be designed so that the side slopes and road grades are not excessively steep. Construction roads should not be constructed in areas which are wet, or on highly erodible soils.

Advantages of Construction Road Stabilization
<ul style="list-style-type: none"> <li>• Reduces the amount of erosion, dust, and tracking of soil off of the site</li> <li>• Provides an effective way for vehicles to move around the construction site, even during wet weather</li> </ul>
Disadvantages of Construction Road Stabilization
<ul style="list-style-type: none"> <li>• Can be expensive</li> <li>• May require maintenance to replace gravel or repair ruts</li> </ul>

### 4.3.2 Stabilized Construction Entrance

#### What Is It

A stabilized construction entrance is a portion of the construction road which is constructed with filter fabric and large stone. The primary purpose of a stabilized construction entrance is to reduce the amount of soil tracked off of the construction site by vehicles leaving the site. The rough surface of the stone will shake and pull the soil off of the vehicles tires as it drives over the entrance. The stone will also reduce erosion and rutting on the portion of the road where it is installed by protecting the soil below. The filter fabric separates the stone from the soil below, preventing the large stone from being ground into the soil. The fabric also reduces the amount of rutting caused by the vehicle tires by spreading the weight of the vehicles over a larger soil area than just the tire width.

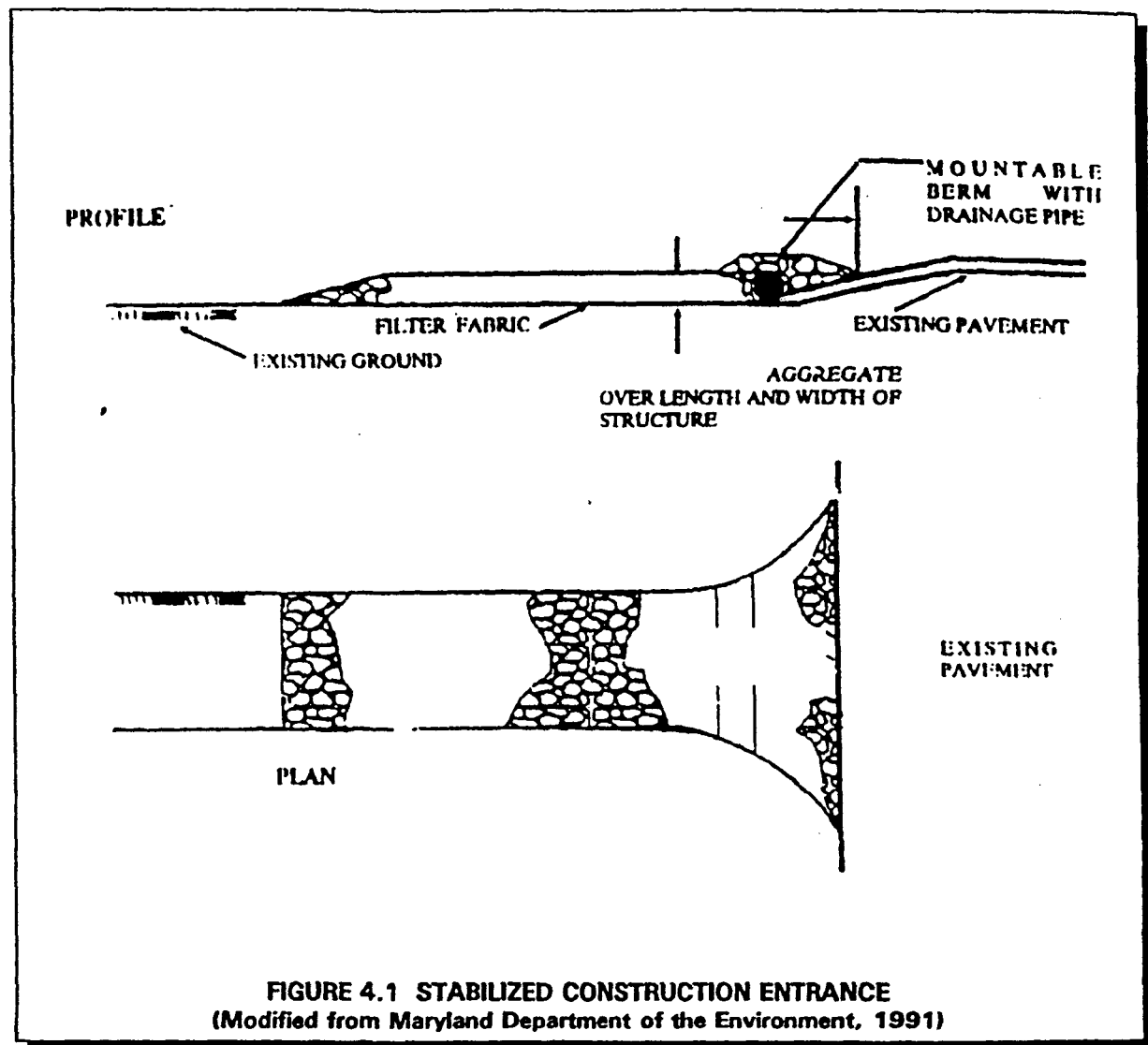
#### When and Where to Use It

A stabilized construction entrance should be installed at every point where traffic leaves or enters a disturbed area before construction begins on the site. Typically, stabilized construction entrances are installed at the locations where the construction traffic enters or leaves an existing paved road; however, a stabilized construction entrance should not be installed over an existing pavement (except for a slight overlap as shown in Figure 4.1). Where the construction will require a permanent access road or driveway, it is recommended that a stabilized construction entrance be installed in this location prior to the permanent pavement.

#### What to Consider

Stabilized construction entrances should be wide enough and long enough so that the largest construction vehicle will fit in the entrance with room to spare. If a large amount of traffic is expected at an entrance, then the stabilized construction entrance should be wide enough to fit two vehicles across with room to spare.

If the stabilized construction entrance has to cross a swale or stream, then a stream crossing should be provided (see page 3-42).



Stone used for the construction entrance should be large enough so that it does not get picked up and tracked off of the site by the vehicle traffic. Sharp edged stone should not be used to avoid puncturing tires.

If vehicles will be turning onto the paved road or drive from the stabilized construction entrance, then an apron should be provided as shown above so that vehicles do not go off of the stabilized construction entrance before they leave the site.

The temporary construction entrance may be provided with a vehicle wash rack which drains to a temporary sediment trap or other sediment removing measure. This will allow vehicle tires to be washed prior to leaving the site and ensure that wash water sediments are removed and can be properly disposed of.

<b>Advantages of a Stabilized Construction Entrance</b>
<ul style="list-style-type: none"><li>• Is an effective means for reducing the amount of soil tracked off of a construction site</li><li>• Can improve the appearance of the construction site from the public's point of view</li></ul>
<b>Disadvantages of a Stabilized Construction Entrance</b>
<ul style="list-style-type: none"><li>• Only works if it is installed at every location where traffic leaves and enters the site</li><li>• Cannot always remove all of the soil tracked off of the disturbed areas by vehicles; when soil is tracked onto a road, it should be cleaned up immediately</li><li>• Stone may have to be added to keep it effective</li></ul>



## Figures

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Figure 3 BMP Fact Sheets(from: Storm Water Management for Construction Activities, EPA, 1992)

- Silt Fence
- Pipe Slope Drain
- Stabilized Construction Entrance
- Filter Fabric Inlet Protection
- Excavated Gravel Inlet Protection
- Block and Gravel Inlet Protection
- Check Dams
- Earth Dike
- Drainage Swale
- Temporary Sediment Trap

## SILT FENCE

September 1992

### Design Criteria

- ▲ Silt fences are appropriate at the following general locations:
  - ▲ Immediately upstream of the point(s) of runoff discharge from a site before flow becomes concentrated (maximum design flow rate should not exceed 0.5 cubic feet per second).
  - ▲ Below disturbed areas where runoff may occur in the form of overland flow.
- ▲ Ponding should not be allowed behind silt fences since they will collapse under high pressure; the design should provide sufficient outlets to prevent overtopping.
- ▲ The drainage area should not exceed 0.25 acre per 100 feet of fence length.
- ▲ For slopes between 50:1 and 5:1, the maximum allowable upstream flow path length to the fence is 100 feet; for slopes of 2:1 and steeper, the maximum is 20 feet.
- ▲ The maximum upslope grade perpendicular to the fence line should not exceed 1:1.
- ▲ Synthetic silt fences should be designed for 6 months of service; burlap is only acceptable for periods of up to 60 days.

### Materials

- ▲ Synthetic filter fabric should be a pervious sheet of polypropylene, nylon, polyester, or polyethylene yarn conforming to the requirements in Table 1 below.

TABLE 1. SYNTHETIC FILTER FABRIC REQUIREMENTS

Physical Property	Requirements
Filtering Efficiency	75% - 85% (minimum)
Tensile Strength at 20% (maximum) Elongation	Standard Strength - 30 lb/linear inch (minimum)
	Extra Strength - 50 lb/linear inch (minimum)
Slurry Flow Rate	0.3 gal/ft <sup>2</sup> /min (minimum)

- ▲ Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120°F.
- ▲ Burlap of 10 ounces per square yard of fabric can also be used.
- ▲ The filter fabric should be purchased in a continuous roll to avoid joints.
- ▲ While not required, wire fencing may be used as a backing to reinforce standard strength filter fabric. The wire fence (14 gauge minimum) should be at 22-48 inches wide and should have a maximum mesh spacing of 6 inches.
- ▲ Posts should be 2-4 feet long and should be composed of either 2" x 2-4" pine (or equivalent) or 1.00 to 1.33 lb/linear ft steel. Steel posts should have projections for fastening wire and fabric to them.

### Construction Specifications

- ▲ The maximum height of the filter fence should range between 18 and 36 inches above the ground surface (depending on the amount of upslope ponding expected).

## SILT FENCE

- ▲ Posts should be spaced 8 to 10 feet apart when a wire mesh support fence is used and no more than 6 feet apart when extra strength filter fabric (without a wire fence) is used. The posts should extend 12 to 30 inches into the ground.
- ▲ A trench should be excavated 4 to 8 inches wide and 4 to 12 inches deep along the upslope side of the line of posts.
- ▲ If standard strength filter fabric is to be used, the optional wire mesh support fence may be fastened to the upslope side of the posts using 1 inch heavy duty wire staples, tie wires, or hog rings. Extend the wire mesh support to the bottom of the trench. The filter fabric should then be stapled or wired to the fence, and 8 to 20 inches of the fabric should extend into the trench (Figure 1).
- ▲ Extra strength filter fabric does not require a wire mesh support fence. Staple or wire the filter fabric directly to the posts and extend 8 to 20 inches of the fabric into the trench (Figure 1).
- ▲ Where joints in the fabric are required, the filter cloth should be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed.
- ▲ Do not attach filter fabric to trees.
- ▲ Backfill the trench with compacted soil or 0.75 inch minimum diameter gravel placed over the filter fabric.

## Maintenance

- ▲ Inspect filter fences daily during periods of prolonged rainfall, immediately after each rainfall event, and weekly during periods of no rainfall. Make any required repairs immediately.
- ▲ Sediment must be removed when it reaches one-third to one-half the height of the filter fence. Take care to avoid damaging the fence during cleanout.
- ▲ Filter fences should not be removed until the upslope area has been permanently stabilized. Any sediment deposits remaining in place after the filter fence has been removed should be dressed to conform with the existing grade, prepared, and seeded.

## Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.

## PIPE SLOPE DRAIN

September 1992

### Design Criteria

- ▲ Pipe Slope Drains (PSD) are appropriate in the following general locations:
  - ▲ On cut or fill slopes before permanent storm water drainage structures have been installed.
  - ▲ Where earth dikes or other diversion measures have been used to concentrate flows.
  - ▲ On any slope where concentrated runoff crossing the face of the slope may cause gullies, channel erosion, or saturation of slide-prone soils.
  - ▲ As an outlet for a natural drainageway.
- ▲ The drainage area may be up to 10 acres; however, many jurisdictions consider 5 acres the recommended maximum.
- ▲ The PSD design should handle the peak runoff for the 10-year storm. Typical relationships between area and pipe diameter are shown in Table 2 below.

TABLE 2. RELATIONSHIP BETWEEN AREA AND PIPE DIAMETER

Maximum Drainage Area (Acres)	Pipe Diameter (D) (Inches)
0.5	12
0.75	15
1.0	18

### Materials

- ▲ Pipe may be heavy duty flexible tubing designed for this purpose, e.g., nonperforated, corrugated plastic pipe, corrugated metal pipe, bituminous fiber pipe, or specially designed flexible tubing.
- ▲ A standard flared end section secured with a watertight fitting should be used for the inlet. A standard T-section fitting may also be used.
- ▲ Extension collars should be 12-inch long sections of corrugated pipe. All fittings must be watertight.

### Construction Specifications

- ▲ Place the pipe slope drain on undisturbed or well-compacted soil.
- ▲ Soil around and under the entrance section must be hand-tamped in 4-inch to 8-inch lifts to the top of the dike to prevent piping failure around the inlet.
- ▲ Place filter cloth under the inlet and extend 5 feet in front of the inlet and be keyed in 6-inches on all sides to prevent erosion. A 6-inch metal toe plate may also be used for this purpose.
- ▲ Ensure firm contact between the pipe and the soil at all points by backfilling around and under the pipe with stable soil material hand compacted in lifts of 4-inches to 8-inches.
- ▲ Securely stake the PSD to the slope using grommets provided for this purpose at intervals of 10 feet or less.
- ▲ Ensure that all slope drain sections are securely fastened together and have watertight fittings.

## PIPE SLOPE DRAIN

- ▲ Extend the pipe beyond the toe of the slope and discharge at a nonerosive velocity into a stabilized area (e.g., rock outlet protection may be used) or to a sedimentation trap or pond.
- ▲ The PSD should have a minimum slope of 3 percent or steeper.
- ▲ The height at the centerline of the earth dike should range from a minimum of 1.0 foot over the pipe to twice the diameter of the pipe measured from the invert of the pipe. It should also be at least 6 inches higher than the adjoining ridge on either side.
- ▲ At no point along the dike will the elevation of the top of the dike be less than 6 inches higher than the top of the pipe.
- ▲ Immediately stabilize all areas disturbed by installation or removal of the PSD.

### Maintenance

- ▲ Inspect regularly and after every storm. Make any necessary repairs.
- ▲ Check to see that water is not bypassing the inlet and undercutting the inlet or pipe. If necessary, install headwall or sandbags.
- ▲ Check for erosion at the outlet point and check the pipe for breaks or clogs. Install additional outlet protection if needed and immediately repair the breaks and clean any clogs.
- ▲ Do not allow construction traffic to cross the PSD and do not place any material on it.
- ▲ If a sediment trap has been provided, clean it out when the sediment level reaches 1/3 to 1/2 the design volume.
- ▲ The PSD should remain in place until the slope has been completely stabilized or up to 30 days after permanent slope stabilization.

### Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
  - ▲ Draft Sediment and Erosion Control, An Inventory of Current Practices, April 20, 1990. Prepared by Kamber Engineering for the U.S. Environmental Protection Agency, Office of Water Enforcement and Permits, Washington, D.C. 20460.

## STABILIZED CONSTRUCTION ENTRANCE

September 1992

### Design Criteria

- ▲ A Stabilized Construction Entrance (SCE) is appropriate in the following locations:
  - ▲ Wherever vehicles are leaving a construction site and enter onto a public road
  - ▲ At any unpaved entrance/exit location where there is risk of transporting mud or sediment onto paved roads.
- ▲ The width should be at least 10 feet to 12 feet or the as wide as the entire width of the access. At sites where traffic volume is high the entrance should be wide enough for two vehicles to pass safely.
- ▲ The length should be between 50 to 75 feet in length.
- ▲ Flare the entrance where it meets the existing road to provide a turning radius.
- ▲ Runoff from a stabilized construction entrance should drain to a sediment trap or sediment basin.
- ▲ Pipe placed under the entrance to handle runoff should be protected with a mountable berm.
- ▲ Dust control should be provided in accordance with Section 3.2.1.

### Materials

- ▲ Crushed stone 2-inches-4-inches in diameter
- ▲ Geotextile (filter fabric) with the properties listed in Table 3 below.

TABLE 3. GEOTEXTILE REQUIREMENTS

Physical Property	Requirements
Grab Tensile Strength	220 lbs. (ASTM D1682)
Elongation Failure	60 % (ASTM D1682)
Mullen Burst Strength	430 lbs. (ASTM D3768)
Puncture Strength	125 lbs. (ASTM D751) (modified)
Equivalent Opening	Size 40-80 (US std Sieve) (CW-02215)

### Construction Specifications

- ▲ Clear all vegetation, roots and all other obstructions in preparation for grading.
- ▲ Prior to placing geotextile (filter fabric) make sure that the entrance is properly graded and compacted.

## STABILIZED CONSTRUCTION ENTRANCE

- ▲ To reduce maintenance and loss of aggregate place geotextile fabric (filter cloth) over the existing ground before placing the stone for the entrance.
- ▲ Stone should be placed to a depth of 6-inches or greater for the entire width and length of the SCE.

### Maintenance

- ▲ Inspect the measure on a regular basis and after there has been a high volume of traffic or storm event.
- ▲ Apply additional stone periodically and when repair is required.
- ▲ Immediately remove sediments or any other materials tracked onto the public roadway.
- ▲ Ensure that associated sediment control measures are in good working condition.

### Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
  - ▲ Draft Sediment and Erosion Control, An Inventory of Current Practices, April 20, 1990. Prepared by Kamber Engineering for the U.S. Environmental Protection Agency, Office of Water Enforcement and Permits, Washington, D.C. 20460.

## FILTER FABRIC INLET PROTECTION

September 1992

### Design Criteria

- ▲ Inlet protection is appropriate in the following locations:
  - ▲ In small drainage areas (less than 1 acre) where the storm drain inlet is functional before the drainage area has been permanently stabilized.
  - ▲ Where there is danger of sediment silting in an inlet which is in place prior to permanent stabilization.
- ▲ Filter fabric inlet protection is appropriate for most types of inlets where the drainage area is one acre or less.
- ▲ The drainage area should be fairly flat with slopes of 5% or less and the area immediately surrounding the inlet should not exceed a slope of 1%.
- ▲ Overland flow to the inlet should be no greater than 0.5 cfs.
- ▲ This type of inlet protection is not appropriate for use in paved areas because the filter fabric requires staking.
- ▲ To avoid failure caused by pressure against the fabric when overtopping occurs, it is recommended that the height of the filter fabric be limited to 1.5 feet above the crest of the drop inlet.
- ▲ It is recommended that a sediment trapping sump of 1 to 2 feet in depth with side slopes of 2:1 be provided.

### Materials

- ▲ Filter fabric (see the fabric specifications for silt fence).
- ▲ Wooden stakes 2" x 2" or 2" x 4" with a minimum length of 3 feet.
- ▲ Heavy-duty wire staples at least ½ inch in length.
- ▲ Washed gravel ¾ inches in diameter.

### Construction Specifications

- ▲ Place a stake at each corner of the inlet and around the edges at no more than 3 feet apart. Stakes should be driven into the ground 18 inches or at a minimum 8 inches.
- ▲ For stability a framework of wood strips should be installed around the stakes at the crest of the overflow area 1.5 feet above the crest of the drop inlet.
- ▲ Excavate a trench of 8 inches to 12 inches in depth around the outside perimeter of the stakes. If a sediment trapping sump is being provided then the excavation may be as deep as 2 feet.
- ▲ Staple the filter fabric to the wooden stakes with heavy-duty staples, overlapping the joints to the next stake. Ensure that between 12 inches to 32 inches of filter fabric extends at the bottom so it can be formed into the trench.
- ▲ Place the bottom of the fabric in the trench and backfill the trench all the way around using washed gravel to a minimum depth of 4 inches.



## **FILTER FABRIC INLET PROTECTION**

### **Maintenance**

- ▲ Inspect regularly and after every storm. Make any repairs necessary to ensure the measure is in good working order.
- ▲ Sediment should be removed and the trap restored to its original dimensions when sediment has accumulated to  $\frac{1}{2}$  the design depth of the trap.
- ▲ If the filter fabric becomes clogged it should be replaced immediately.
- ▲ Make sure that the stakes are firmly in the ground and that the filter fabric continues to be securely anchored.
- ▲ All sediments removed should be properly disposed.
- ▲ Inlet protection should remain in place and operational until the drainage area is completely stabilized or up to 30 days after the permanent site stabilization is achieved.

### **Sources**

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
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## EXCAVATED GRAVEL INLET PROTECTION

September 1992

### Design Criteria

- ▲ Inlet protection is appropriate in the following locations:
  - ▲ In small drainage areas (less than 1 acre) where the storm drain inlet is functional before the drainage area has been permanently stabilized.
  - ▲ Where there is danger of sediment silting in an inlet which is in place prior to permanent stabilization.
  - ▲ Where ponding around the inlet structure could be a problem to traffic on site.
- ▲ Excavated gravel and mesh inlet protection may be used with most inlets where overflow capability is needed and in areas of heavy flows, 0.5 cfs or greater.
- ▲ The drainage area should not exceed 1 acre.
- ▲ The drainage area should be fairly flat with slopes of 5% or less.
- ▲ The trap should have a sediment trapping sump of 1 to 2 feet measured from the crest of the inlet. Side slopes should be 2:1. The recommended volume of excavation is 35 yd<sup>3</sup>/acre disturbed.
- ▲ To achieve maximum trapping efficiency the longest dimension of the basin should be oriented toward the longest inflow area.

### Materials

- ▲ Hardware cloth or wire mesh with ½ inch openings.
- ▲ Filter fabric (see the fabric specifications for silt fence).
- ▲ Washed gravel ¾ inches to 4 inches in diameter.

### Construction Specifications

- ▲ Remove any obstructions to excavating and grading. Excavate sump area, grade slopes and properly dispose of soil.
- ▲ The inlet grate should be secured to prevent seepage of sediment laden water.
- ▲ Place wire mesh over the drop inlet so that the wire extends a minimum of 1 foot beyond each side of the inlet structure. Overlap the strips of mesh if more than one is necessary.
- ▲ Place filter fabric over the mesh extending it at least 18 inches beyond the inlet opening on all sides. Ensure that weep holes in the inlet structure are protected by filter fabric and gravel.
- ▲ Place stone/gravel over the fabric/wire mesh to a depth of at least 1 foot.

## EXCAVATED GRAVEL INLET PROTECTION

### Maintenance

- ▲ Inspect regularly and after every storm. Make any repairs necessary to ensure the measure is in good working order.
- ▲ Sediment should be removed and the trap restored to its original dimensions when sediment has accumulated to  $\frac{1}{2}$  the design depth of the trap.
- ▲ Clean or remove and replace the stone filter or filter fabric if they become clogged.
- ▲ Inlet protection should remain in place and operational until the drainage area is completely stabilized or up to 30 days after the permanent site stabilization is achieved.

### Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
  - ▲ Draft Sediment and Erosion Control, An Inventory of Current Practices, April 20, 1990. Prepared by Kamber Engineering for the U.S. Environmental Protection Agency, Office of Water Enforcement and Permits, Washington, D.C. 20460.

## BLOCK AND GRAVEL INLET PROTECTION

September 1992

### Design Criteria

- ▲ Inlet protection is appropriate in the following locations:
  - ▲ In drainage areas (less than 1 acre) where the storm drain inlet is functional before the drainage area has been permanently stabilized.
  - ▲ Where there is danger of sediment silting in an inlet which is in place prior to permanent stabilization.
- ▲ Block and gravel inlet protection may be used with most types of inlets where overflow capability is needed and in areas of heavy flows 0.5 cfs or greater.
- ▲ The drainage area should not exceed 1 acre.
- ▲ The drainage area should be fairly flat with slopes of 5% or less.
- ▲ To achieve maximum trapping efficiency the longest dimension of the basin should be oriented toward the longest inflow area.
- ▲ Where possible the trap should have sediment trapping sump of 1 to 2 feet in depth with side slopes of 2:1.
- ▲ There are several other types of inlet protection also used to prevent siltation of storm drainage systems and structures during construction, they are:
  - ▲ Filter Fabric Inlet Protection
  - ▲ Excavated Gravel Inlet Protection

### Materials

- ▲ Hardware cloth or wire mesh with ½ inch openings
- ▲ Filter fabric (see the fabric specifications for silt fence)
- ▲ Concrete block 4 inches to 12 inches wide.
- ▲ Washed gravel ¾ inches to 4 inches in diameter

### Construction Specifications

- ▲ The inlet grate should be secured to prevent seepage of sediment laden water.
- ▲ Place wire mesh over the drop inlet so that the wire extends a minimum of 12 inches to 18 inches beyond each side of the inlet structure. Overlap the strips of mesh if more than one is necessary.
- ▲ Place filter fabric (optional) over the mesh and extend it at least 18 inches beyond the inlet structure.
- ▲ Place concrete blocks over the filter fabric in a single row lengthwise on their sides along the sides of the inlet. The foundation should be excavated a minimum of 2 inches below the crest of the inlet and the bottom row of blocks should be against the edge of the structure for lateral support.
- ▲ The open ends of the block should face outward not upward and the ends of adjacent blocks should abut. Lay one block on each side of the structure on its side to allow for dewatering of the pool.
- ▲ The block barrier should be at least 12 inches high and may be up to a maximum of 24 inches high and may be from 4 inches to 12 inches in depth depending on the size of block used.
- ▲ Prior to backfilling, place wire mesh over the outside vertical end of the blocks so that stone does not wash down the inlet.
- ▲ Place gravel against the wire mesh to the top of the blocks.

## BLOCK AND GRAVEL INLET PROTECTION

### Maintenance

- ▲ Inspect regularly and after every storm. Make any repairs necessary to ensure the measure is in good working order.
- ▲ Sediment should be removed and the trap restored to its original dimensions when sediment has accumulated to  $\frac{1}{2}$  the design depth of the trap.
- ▲ All sediments removed should be properly disposed of.
- ▲ Inlet protection should remain in place and operational until the drainage area is completely stabilized or up to 30 days after the permanent site stabilization is achieved.

### Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
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## CHECK DAMS

September 1992

### Design Criteria

- ▲ Check dams are appropriate for use in the following locations:
  - ▲ Across swales or drainage ditches to reduce the velocity of flow.
  - ▲ Where velocity must be reduced because a vegetated channel lining has not yet been established.
- ▲ Check dams may never be used in a live stream unless approved by the appropriate government agency.
- ▲ The drainage area above the check dam should be between 2 acres and 10 acres.
- ▲ The dams must be spaced so that the toe of the upstream dam is never any higher than the top of the downstream dam.
- ▲ The center of the dam must be 6 inches to 9 inches lower than either edge, and the maximum height of the dam should be 24 inches.
- ▲ The check dam should be as much as 18 inches wider than the banks of the channel to prevent undercutting as overflow water re-enters the channel.
- ▲ Excavating a sump immediately upstream from the check dam improves its effectiveness.
- ▲ Provide outlet stabilization below the lowest check dam where the risk of erosion is greatest.
- ▲ Consider the use of channel linings or protection such as plastic sheeting or riprap where there may be significant erosion or prolonged submergence.

### Materials

- ▲ Stone 2 inches to 15 inches in diameter
- ▲ Logs 6 inches to 8 inches in diameter
- ▲ Sandbags filled with pea gravel
- ▲ Filter fabric (see the fabric specifications for silt fence)

### Construction Specifications

- ▲ Rock Check Dams
  - ▲ Place the stones on the filter fabric either by hand or using appropriate machinery; do not simply dump them in place.
  - ▲ Extend the stone 18 inches beyond the banks and keep the side slopes 2:1 or flatter.
  - ▲ Lining the upstream side of the dam with  $\frac{3}{4}$  inch to 1 $\frac{1}{4}$  inch gravel 1 foot in depth is a suggested option.
- ▲ Log Check Dams
  - ▲ Logs must be firmly embedded in the ground; 18 inches is the recommended minimum depth.
- ▲ Sand Bag Check Dams
  - ▲ Be sure that bags are all securely sealed.
  - ▲ Place bags by hand or use appropriate machinery.

## CHECK DAMS

### Maintenance

- ▲ Inspect regularly and after every storm. Make any repairs necessary to ensure the measure is in good working order.
- ▲ Accumulated sediment and leaves should be removed from behind the dams and erosive damage to the channel restored after each storm or when  $\frac{1}{2}$  the original height of the dam is reached.
- ▲ All accumulated material removed from the dam shall be properly disposed.
- ▲ Replace stone as necessary for the dams to maintain their correct height.
- ▲ If sand bags are used, the fabric of the bags should be inspected for signs of deterioration.
- ▲ Remove stone or riprap if grass lined channel requires mowing.
- ▲ Check dams should remain in place and operational until the drainage area and channel are completely stabilized or up to 30 days after the permanent site stabilization is achieved.
- ▲ Restore the channel lining or establish vegetation when each check dam is removed.

### Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
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## EARTH DIKE

September 1992

### Design Criteria

- ▲ Earth dikes are appropriate in the following situations:
  - ▲ To divert upslope flows away from disturbed areas such as cut or fill slopes and to divert runoff to a stabilized outlet
  - ▲ To reduce the length of the slope runoff will cross
  - ▲ At the perimeter of the construction site to prevent sediment-laden runoff from leaving the site
  - ▲ To direct sediment-laden runoff to a sediment trapping device.
- ▲ When the drainage area to the earth dike is greater than 10 acres, the United States Department of Agriculture - Soil Conservation Service (USDA - SCS) standards and specification for diversions should be consulted.
- ▲ Table 4 contains suggested dike design criteria.

TABLE 4. SUGGESTED DIKE DESIGN CRITERIA

Drainage Area	Under 5 Acres	Between 5-10 Acres
Dike Height	18 inches	30 inches
Dike Width	24 inches	36 inches
Flow Width	4 feet	6 feet
Flow Depth	12 inches	24 inches
Side Slopes	2:1 or less	2:1 or less
Grade	0.5% - 10%	0.5% - 10%

- ▲ The base for a dike 18 inches high and 24 wide at the top should be between 6 feet - 8 feet. The height of the dike is measured on the upslope side.
- ▲ If the dike is constructed using coarse aggregate the side slopes should be 3:1 or flatter.
- ▲ The channel formed behind the dike should have a positive grade to a stabilized outlet. The channel should be stabilized with vegetative or other stabilization measures.
- ▲ Grades over 10% may require an engineering design.
- ▲ Construct the dike where it will not interfere with major areas of construction traffic so that vehicle damage to the dike will be kept to the minimum.
- ▲ Diversion dikes should be installed prior to the majority of soil disturbing activity, and may be removed when stabilization of the drainage area and outlet are complete.

### Materials

- ▲ Compacted Soil
- ▲ Coarse Aggregate



## **EARTH DIKE**

### **Construction Specifications**

- ▲ Clear the area of all trees, brush, stumps or other obstructions.
- ▲ Construct the dike to the designed cross-section, line and grade making sure that there are no irregularities or bank projections to impede the flow.
- ▲ The dike should be compacted using earth moving equipment to prevent failure of the dike.
- ▲ The dike must be stabilized as soon as possible after installation.

### **Maintenance**

- ▲ Inspect regularly and after every storm, make any repairs necessary to ensure the measure is in good working order.
- ▲ Inspect the dike, flow channel and outlet for deficiencies or signs of erosion.
- ▲ If material must be added to the dike be sure it is properly compacted.
- ▲ Reseed or stabilize the dike as needed to maintain its stability regardless if there has been a storm event or not.

### **Sources**

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
  - ▲ Draft Sediment and Erosion Control, An Inventory of Current Practices, April 20, 1990. Prepared by Kamber Engineering for the U.S. Environmental Protection Agency, Office of Water Enforcement and Permits, Washington, D.C. 20460.

## **DRAINAGE SWALE**

September 1992

### **Design Criteria**

- ▲ Temporary drainage swales are appropriate in the following situations:
  - ▲ To divert upslope flows away from disturbed areas such as cut or fill slopes and to divert runoff to a stabilized outlet
  - ▲ To reduce the length of the slope runoff will cross
  - ▲ At the perimeter of the construction site to prevent sediment-laden runoff from leaving the site
  - ▲ To direct sediment-laden runoff to a sediment trapping device.
- ▲ When the drainage area is greater than 10 acres the United States Department of Agriculture - Soil Conservation Service (USDA - SCS) standards and specifications for diversions should be consulted.
- ▲ Swales may have side slopes ranging from 3:1 to 2:1.
- ▲ The minimum channel depth should be between 12 inches and 18 inches.
- ▲ The minimum width at the bottom of the channel should be 24 inches and the bottom should be level.
- ▲ The channel should have a uniform positive grade between 2% and 5%, with no sudden decreases where sediments may accumulate and cause overtopping.
- ▲ The channel should be stabilized with temporary or permanent stabilization measures.
- ▲ Grades over 10% may require an engineering design.
- ▲ Construct the swale away from areas of major construction traffic.
- ▲ Runoff must discharge to a stabilized outlet.

### **Materials**

- ▲ Grass seed for temporary or permanent stabilization
- ▲ Sod
- ▲ Coarse aggregate or riprap

### **Construction Specifications**

- ▲ Clear the area of all trees, brush, stumps or other obstructions.
- ▲ Construct the swale to the designed cross-section, line and grade making sure that there are no irregularities or bank projections to impede the flow.
- ▲ The lining should be well compacted using earth moving equipment and stabilization initiated as soon as possible.
- ▲ Stabilize lining with grass seed, sod, or riprap.
- ▲ Surplus material should be properly distributed or disposed of so that it does not interfere with the functioning of the swale.
- ▲ Outlet dissipation measures should be used to avoid the risk of erosion.

### **Maintenance**

- ▲ Inspect regularly and after every storm, make any repairs necessary to ensure the measure is in good working order.
- ▲ Inspect the flow channel and outlet for deficiencies or signs of erosion.
- ▲ If surface of the channel requires material to be added be sure it is properly compacted.
- ▲ Reseed or stabilize the channel as needed to prevent erosion during a storm event.

## **DRAINAGE SWALE**

### **Sources**

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
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- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
  - ▲ Draft Sediment and Erosion Control, An Inventory of Current Practices, April 20, 1990. Prepared by Kamber Engineering for the U.S. Environmental Protection Agency, Office of Water Enforcement and Permits, Washington, D.C. 20460.

## TEMPORARY SEDIMENT TRAP

September 1992

### Design Criteria

- ▲ Temporary sediment traps are appropriate in the following locations:
  - ▲ At the outlet of the perimeter controls installed during the first stage of construction.
  - ▲ At the outlet of any structure which concentrates sediment-laden runoff, e.g. at the discharge point of diversions, channels, slope drains, or other runoff conveyances.
  - ▲ Above a storm water inlet that is in line to receive sediment-laden runoff.
- ▲ Temporary sediment traps may be constructed by excavation alone or by excavation in combination with an embankment.
- ▲ Temporary sediment traps are often used in conjunction with a diversion dike or swale.
- ▲ The drainage area for the sediment trap should not exceed 5 disturbed acres.
- ▲ The trap must be accessible for ease of regular maintenance which is critical to its functioning properly.
- ▲ Sediment traps are temporary measures and should not be planned to remain in place longer than between 18 and 24 months.
- ▲ The capacity of the sedimentation pool should provide storage volume for 3,600 cubic feet/acre drainage area.
- ▲ The outlet should be designed to provide a 2 foot settling depth and an additional sediment storage area 1 ½ feet deep at the bottom of the trap.
- ▲ The embankment may not exceed 5 feet in height.
- ▲ The recommended minimum width at the top of the embankment is between 2 feet and 5 feet.
- ▲ The minimum recommended length of the weir is between 3 feet and 4 feet, and the maximum is 12 feet in length.
- ▲ Table 5 illustrates the typical relationship between the embankment height, the height of the outlet ( $H_o$ ), and the width (W) at the top of the embankment.

TABLE 5. EMBANKMENT HEIGHT vs. OUTLET HEIGHT AND WIDTH

H	$H_o$	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5

### Materials

- ▲ Filter fabric (see fabric requirement for silt fence)
- ▲ Coarse aggregate or riprap 2 inches to 14 inches in diameter
- ▲ Washed gravel ¾ to 1 ½ inches in diameter
- ▲ Seed and mulch for stabilization

## TEMPORARY SEDIMENT TRAP

### Construction Specifications

- ▲ Clear the area of all trees, brush, stumps or other obstructions.
- ▲ Construct the embankment in 8 inch lifts compacting each lift with the appropriate earth moving equipment. Fill material must be free of woody vegetation, roots, or large stones.
- ▲ Keep cut and fill slopes between 3:1 and 2:1 or flatter.
- ▲ Line the outlet area with filter fabric prior to placing stone or gravel.
- ▲ Construct the gravel outlet using heavy stones between 6 inches and 14 inches in diameter and face the upstream side with a 12 inch layer of  $\frac{3}{4}$  inch to 1  $\frac{1}{2}$  inch washed gravel on the upstream side.
- ▲ Seed and mulch the embankment as soon as possible to ensure stabilization.

### Maintenance

- ▲ Inspect regularly and after every storm. Make any repairs necessary to ensure the measure is in good working order.
- ▲ Frequent removal of sediment is critical to the functioning of this measure. At a minimum sediment should be removed and the trap restored to its original volume when sediment reaches  $\frac{1}{2}$  of the original volume.
- ▲ Sediment removed from the trap must be properly disposed.
- ▲ Check the embankment regularly to make sure it is structurally sound.

### Sources

- ▲ Commonwealth of Virginia - County of Fairfax, 1987. 1987 Check List For Erosion And Sediment Control - Fairfax County, Virginia.
- ▲ State of North Carolina, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development.
- ▲ Maryland Department of the Environment, 1991. 1991 Maryland Standards And Specifications For Soil Erosion And Sediment Control - Draft.
- ▲ Storm Water Management Manual for the Puget Sound Basin. State of Washington, Department of Ecology, 1991.
- ▲ Cost Data:
  - ▲ Draft Sediment and Erosion Control, An Inventory of Current Practices, April 20, 1990. Prepared by Kamber Engineering for the U.S. Environmental Protection Agency, Office of Water Enforcement and Permits, Washington, D.C. 20460.

## **APPENDIX A Notice of Coverage Under Construction Stormwater General Permit**

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# ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276  
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601

ROD R. BLAGOJEVICH, GOVERNOR

RENEE CIPRIANO, DIRECTOR

217/782-0610

May 27, 2003

SOLUTAI INC  
575 MARYVILLE CENTRE DR  
ST LOUIS, MO 63166

Re: FACILITY: SITE R SAUGET  
NPDES Permit No: ILR108258  
COUNTY: ST CLAIR

Notice of Coverage Under Construction Storm Water General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity from construction sites are appropriately covered by the attached General NPDES Permit issued by the Agency.

Your discharge is covered by this permit effective as of the date of this letter. The Permit as issued covers application requirements, a storm water pollution prevention plan and reporting requirements.

This letter shows your facility permit number below the construction site name. Please save this number and reference it in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at the above telephone number and address.

Very truly yours,

Toby Frevert, P.E.  
Manager  
Division of Water Pollution Control

TF:med:concoverage 3

Enclosure

cc: Records Unit

Region 6

ROCKFORD - 4302 North Main Street, Rockford, IL 61103 - (815) 987-7760 • DES PLAINES - 9511 W. Harrison St., Des Plaines, IL 60016 - (847) 294-4000  
ELGIN - 595 South State, Elgin, IL 60123 - (847) 608-3131 • PEORIA - 5415 N. University St., Peoria, IL 61614 - (309) 693-5463  
BUREAU OF LAND - PEORIA - 7620 N. University St., Peoria, IL 61614 - (309) 693-5462 • CHAMPAIGN - 2125 South First Street, Champaign, IL 61820 - (217) 278-5800  
SPRINGFIELD - 4500 S. Sixth Street Rd., Springfield, IL 62706 - (217) 786-6892 • COLLINSVILLE - 2009 Mall Street, Collinsville, IL 62234 - (618) 346-5120  
MARION - 2309 W. Main St., Suite 116, Marion, IL 62959 - (618) 993-7200

## **APPENDIX B**

## **Letter Notice To IEPA of Amendment**

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**SOLUTIA**

*Solutions for a better life.*

**Solutia Inc.**

W.G. Krummrich Plant

500 Monsanto Avenue

Sauget, Illinois 62206-1198

Tel 618-271-5835

August 13, 2003

Ms. Marilyn Davenport  
Permit Section  
Division of Water Pollution Control  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
Springfield, Illinois 62794-9276

**Re: Notice of Intent Addendum  
General Permit to Discharge Storm Water  
Construction Site Activities  
Site R - Sauget, Illinois**

Dear Ms. Davenport:

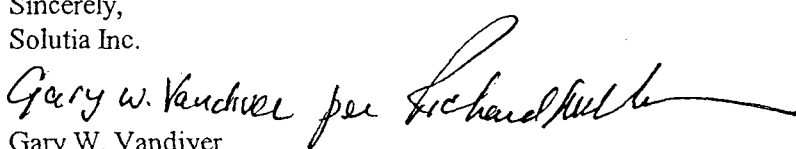
Pursuant to your conversation with Mr. Martin Swanson of URS on August 12, 2003, we are submitting this addendum to the Notice of Intent (NOI) which was prepared for Site R, 5 Riverview Avenue, Sauget, Illinois. The original NOI was submitted on April 24, 2003 for coverage under the Illinois Environmental Protection Agency (IEPA) General Permit to discharge storm water from construction activities. The IEPA issued the Notice of Coverage under the Construction General Storm Water Permit (NPDES Permit No. ILR108258) on May 27, 2003. A copy of the original NOI and the IEPA Notice of Coverage are attached.

This addendum is submitted to cover additional construction activities being performed at the same site. These additional activities will increase the total size of the construction site to encompass 4.5 acres. These construction activities are scheduled to begin on August 22, 2003 and should be completed by March, 2004. The contractor for the work will be Inquip Associates, Inc., P.O. Box 6277, McLean, Virginia, 22106. The contact person for our contractor is Mr. James C. Edwards (703-442-0143).

The storm water pollution prevention plan (SWPPP) that was prepared for the initial construction activities is being modified to reflect the additional work to be performed at the site. This SWPPP will be finalized prior to the start of construction and will be adhered to throughout the construction activities.

Please be advised that I am the new contact person for Solutia on the project. I can be reached at 314-674-6768. Should you have any questions, or require additional information regarding this NOI addendum, please feel free to call.

Sincerely,  
Solutia Inc.

  
Gary W. Vandiver  
Project Coordinator

Attachments

**NOTICE OF INTENT (NOI)**  
**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**  
**GENERAL PERMIT TO DISCHARGE STORM WATER**  
**CONSTRUCTION SITE ACTIVITIES**

Please use the tab or arrow keys

**OWNER INFORMATION**

NAME:	LAST Solutia Inc.	FIRST	MIDDLE	OWNER TYPE:	Private		
MAILING ADDRESS:	575 Maryville Centre Drive						
CITY:	St. Louis			STATE:	MO	ZIP: 63166	
CONTACT PERSON:	Steve Smith			TELEPHONE NUMBER:	AREA CODE 314	NUMBER 674-4660	

**CONTRACTOR INFORMATION**

NAME:	LAST (To Be Determined)	FIRST	MIDDLE	TELEPHONE NUMBER:	AREA CODE	NUMBER
MAILING ADDRESS:		CITY:		STATE:		ZIP:

**CONSTRUCTION SITE INFORMATION**

SELECT ONE:	Existing Site	NOTE: WHEN SELECTING CHANGE OF INFORMATION ENTER PERMIT NO. ILR10				
FACILITY NAME:	Site R			OTHER NPDES PERMIT NOS.:		
FACILITY LOCATION:	5 Riverview Avenue			TELEPHONE NUMBER:	AREA CODE 618	NUMBER 875-0268
CITY:	Sauget	STATE:	IL	ZIP:	62201	LATITUDE: 38° 35' 55" LONGITUDE: 90° 11' 2"
COUNTY:	St. Clair		SECTION:		TOWNSHIP:	RANGE:
APPROX. CONST. START DATE:	05 / 12 / 03		APPROX. CONSTRUCTION END DATE:	10 / 10 / 03		TOTAL SIZE OF CONSTRUCTION SITE IN ACRES: 2.9

**TYPE OF CONSTRUCTION (SELECT ALL THAT APPLY)**

<input type="checkbox"/> RESIDENTIAL	<input checked="" type="checkbox"/> COMMERCIAL	<input type="checkbox"/> INDUSTRIAL	<input type="checkbox"/> RECONSTRUCTION	<input type="checkbox"/> TRANSPORTATION	<input type="checkbox"/> OTHER
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**HISTORIC PRESERVATION AND ENDANGERED SPECIES COMPLIANCE**

HAS THIS PROJECT SATISFIED APPLICABLE REQUIREMENTS FOR COMPLIANCE WITH ILLINOIS LAW ON:		
HISTORIC PRESERVATION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
ENDANGERED SPECIES	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of the permit, including the development and implementation of a storm water pollution prevention plan and a monitoring program plan, will be complied with.

OWNER SIGNATURE: 

DATE: 4/24/03

FOR OFFICE USE ONLY

MAIL COMPLETED FORM TO:	ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF WATER POLLUTION CONTROL ATTN: PERMIT SECTION POST OFFICE BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276	LOG:
(DO NOT SUBMIT ADDITIONAL DOCUMENTATION UNLESS REQUESTED)		PERMIT NO. ILR10
		DATE:

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

## **APPENDIX C**

## **Notice of Termination of Coverage**

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**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**  
**NOTICE OF TERMINATION (NOT)**  
**OF COVERAGE UNDER THE GENERAL PERMIT**  
**FOR STORM WATER DISCHARGES**  
**ASSOCIATED WITH CONSTRUCTION SITE ACTIVITIES**

Please use the tab or arrow keys

**OWNER INFORMATION**

NAME:	LAST	FIRST	MIDDLE	OWNER TYPE: PRIVATE (Select One)			
MAILING ADDRESS:							
CITY:				STATE:		ZIP:	
CONTACT PERSON:				TELEPHONE NUMBER:	AREA CODE	NUMBER	

**CONTRACTOR INFORMATION**

NAME:	LAST	FIRST	MIDDLE	TELEPHONE NUMBER:	AREA CODE	NUMBER	
MAILING ADDRESS:				CITY:		STATE:	ZIP:

**CONSTRUCTION SITE INFORMATION**

FACILITY NAME:				OTHER NPDES PERMIT NOS.:		I	L	R	1	0				
FACILITY LOCATION:														
CITY:				STATE:	IL	ZIP:		LATITUDE:			LONGITUDE:			
COUNTY:					SECTION:		TOWNSHIP:		RANGE:					

I certify under penalty of law that disturbed soils at the identified facility have been finally stabilized or that all storm water discharges associated with industrial activity from the identified facility that are authorized by an NPDES general permit have otherwise been eliminated. I understand that by submitting this notice of termination, that I am no longer authorized to discharge storm water associated with industrial activity by the general permit, and that discharging pollutants in storm water associated with industrial activity to Waters of the State is unlawful under the Environmental Protection Act and the Clean Water Act where the discharge is not authorized by an NPDES permit.

OWNER SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

MAIL COMPLETED FORM TO:  
  
(DO NOT SUBMIT ADDITIONAL  
DOCUMENTATION UNLESS  
REQUESTED)

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF WATER POLLUTION CONTROL  
ATTN: PERMIT SECTION  
POST OFFICE BOX 19276  
SPRINGFIELD, ILLINOIS 62794-9276

**FOR OFFICE USE ONLY**

LOG:
PERMIT NO. ILR10 _____
DATE:

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

## GUIDELINES FOR COMPLETION OF NOTICE OF TERMINATION (NOT) FORM

Please adhere to the following guidelines:

Submit original, photocopy or facsimile copies. Facsimile and/or photo copies should be followed-up with an original signature copy as soon as possible. Please write "copy" under the "For Office Use Only" box in the lower right hand corner.

.... Submit completed forms to:

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Permit Section  
Post Office Box 19276  
Springfield, Illinois 62794-9276  
217/782-0610

.... Reports must be typed or printed legibly and signed.

.... NOTE: FACILITY LOCATION IS NOT NECESSARILY THE FACILITY MAILING ADDRESS, BUT SHOULD DESCRIBE WHERE THE FACILITY IS LOCATED.

.... Use the formats given in the following examples for correct form completion.

	<u>Example</u>	<u>Format</u>
SECTION	12	1 or 2 numerical digits
TOWNSHIP	12N	1 or 2 numerical digits followed by "N" or "S"
RANGE	12W	1 or 2 numerical digits followed by "E" or "W"

## **APPENDIX D**

## **Inspection Forms**

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**STORMWATER POLLUTION PREVENTION PLAN  
INSPECTION AND MAINTENANCE REPORT  
BARRIER WALL – SITE R, SAUGET, ILLINOIS**

Inspector's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Days Since Last Rainfall: \_\_\_\_\_ Amount of Last Rainfall: \_\_\_\_\_ Inches

**Stabilization Measures**

Area	Date Since Last Disturbed	Date of Next Disturbance	Stabilized (Yes/No)	Stabilized With	Condition

Stabilization Required:

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To Be Performed By: \_\_\_\_\_ On or Before: \_\_\_\_\_

**STORMWATER POLLUTION PREVENTION PLAN  
INSPECTION AND MAINTENANCE REPORT  
BARRIER WALL – SITE R, SAUGET, ILLINOIS**

**Structural Controls**

Inspector's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Temporary Diversion Swales**

From Point	To Point	Stabilized (Y/N)	Evidence of Washout or Over-Topping (Y/N)

Maintenance Required for Temporary Diversion Swales:

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To Be Performed By: \_\_\_\_\_ On or Before: \_\_\_\_\_



**STORMWATER POLLUTION PREVENTION PLAN  
INSPECTION AND MAINTENANCE REPORT  
BARRIER WALL – SITE R, SAUGET, ILLINOIS**

**Structural Controls**

Inspector's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Silt Fence Sediment Traps**

Location	Bottom of Fabric Still Buried?	Fabric Deteriorated or Sagging?	Posts Tipping Over?	Depth of Sediment

Maintenance Required for Silt Fence:

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To Be Performed By: \_\_\_\_\_ On or Before: \_\_\_\_\_

**STORMWATER POLLUTION PREVENTION PLAN  
INSPECTION AND MAINTENANCE REPORT  
BARRIER WALL – SITE R, SAUGET, ILLINOIS**

Changes Required to the Pollution Prevention Plan:

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Reasons for Changes:

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Inspector's Signature \_\_\_\_\_

Date: \_\_\_\_\_

## **APPENDIXE**

## **Product Specific and Spill Prevention Practices**

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## **APPENDIXE**

## **Product Specific and Spill Prevention Practices**

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### **Product Specific Practices**

The following product specific practices will be followed onsite:

- ◆ **Petroleum Products:** All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the potential for leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.
- ◆ **Fertilizers:** Fertilizers used will be applied only in the maximum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to storm water. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.
- ◆ **Bentonite and other clayey materials:** These materials will be brought on site as needed to complete the barrier wall and stored in a staging area.

### **Spill Prevention Practices**

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- ◆ Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- ◆ Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- ◆ Spills will be cleaned up immediately after discovery.
- ◆ The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- ◆ Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size.
- ◆ The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another. A description of the spill, what caused it, and the cleanup measures will also be included.

## **APPENDIXE**

## **Product Specific and Spill Prevention Practices**

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- ◆ The site superintendent responsible for the day-to-day site operations, and will be the spill prevention and cleanup coordinator. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

## **APPENDIX F**

## **General State Operating Permit**

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## NPDES Permit No. ILR10

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
1021 North Grand East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

### CONSTRUCTION SITE ACTIVITIES

#### NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) Storm Water Permit

Expiration Date: May 31, 2003

Issue Date: May 14, 1998

Effective Date: June 1, 1998

In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter I), and the Clean Water Act, and the regulations thereunder the following discharges are authorized by this permit, in accordance with the conditions and attachments herein:

Thomas G. McSwiggin, P.E.  
Manager, Permit Section  
Division of Water Pollution Control

#### Part I. COVERAGE UNDER THIS PERMIT

A. **Permit Area.** The permit covers all areas of the State of Illinois with discharges to any waters of the State.

B. **Eligibility.**

1. This permit shall authorize all discharges of storm water associated with industrial activity from construction sites, (those sites or common plans of development or sale that will result in the disturbance of five or more acres total land area), (heretofore referred to as storm water discharges from construction activities) occurring after the effective date of this permit (including discharges occurring after the effective date of this permit where the construction activity was initiated before the effective date of this permit), except for discharges identified under paragraph 1.B.3 (Limitations on Coverage).
2. This permit may only authorize a storm water discharge associated with industrial activity from a construction site that is mixed with a storm water discharge from an industrial source other than construction, where:
  - a. the industrial source other than construction is located on the same site as the construction activity;
  - b. storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of this permit; and
  - c. storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring (including storm water discharges from dedicated asphalt plants and dedicated concrete plants) are covered by a different NPDES general permit or individual permit authorizing such discharges.
3. **Limitations on Coverage.** The following storm water discharges from construction sites are not authorized by this permit:
  - a. storm water discharges associated with industrial activity that originate from the site after construction activities have been completed and the site has undergone final stabilization.
  - b. discharges that are mixed with sources of non-storm water other than discharges identified in Part III.A (Prohibition on Non-Storm Water Discharges) of this permit and in compliance with paragraph IV.D.5 (Non-Storm Water Discharges) of this permit.
  - c. storm water discharges associated with industrial activity that are subject to an existing NPDES individual or general permit or which are issued a permit in accordance with Part VI.N (Requiring an Individual Permit or an Alternative General Permit) of this permit. Such discharges may be authorized under this permit after an existing permit expires provided the existing permit did not establish numeric limitations for such discharges; and
  - d. storm water discharges from construction sites that the Agency has determined to be or may reasonably be expected to be contributing to a violation of a water quality standard.

e. Storm water discharges that the Agency, at its discretion, determines are not appropriately authorized or controlled by this general permit.

**C. Authorization.**

1. In order for storm water discharges from construction sites to be authorized to discharge under this general permit a discharger must submit a Notice of Intent (NOI) in accordance with the requirements of Part II below, using an NOI from provided by the Agency, or be covered by a valid Illinois General NPDES Construction Site Activities Permit.
2. Where a new operator (contractor) is selected after the submittal of an NOI under Part II below, a new Notice of Intent (NOI) must be submitted by the owner in accordance with Part II.
3. For projects that have complied with State law on historic preservation and endangered species prior to submittal of the NOI, through coordination with the Illinois Historic Preservation Agency and the Illinois Department of Natural Resources or through fulfillment of the terms of interagency agreements with those agencies, the NOI shall indicate that such compliance has occurred.

Unless notified by the Agency to the contrary, dischargers who submit an NOI in accordance with the requirements of this permit are authorized to discharge storm water from construction sites under the terms and conditions of this permit either:

- a. 48 hours after the date the NOI is postmarked, if the project had established compliance with Illinois law regarding historic preservation and endangered species prior to submittal of the NOI;  
or
- b. 30 days after the date the NOI is postmarked, if the project had not established compliance with Illinois historic preservation and endangered species requirements prior to submittal of the NOI.

The Agency may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI or other information.

**Part II. NOTICE OF INTENT REQUIREMENTS**

**A. Deadlines for Notification.**

1. To receive authorization under this general permit, a discharge must either be covered by a valid Illinois General NPDES Construction Site Permit, or a Notice of Intent (NOI) in accordance with the requirements of this part must be submitted prior to the commencement of construction. For projects that have established compliance with Illinois law regarding historic preservation and endangered species prior to submittal of the NOI, the NOI must be submitted at least 48 hours prior to the commencement of construction. For all other projects, the NOI must be submitted at least 30 days prior to the commencement of construction.
2. Discharges that are covered by a valid Illinois General NPDES Construction Site Activities Permit are automatically covered by this permit.
3. A discharger may submit an NOI in accordance with the requirements of this part after the start of construction. In such instances, the Agency may bring an enforcement action for any discharges of storm water associated with industrial activity from a construction site that have occurred on or after the start of construction.

**B. Failure to Notify.** Dischargers who fail to notify the Agency of their intent to be covered, and discharge storm water associated with construction site activity to Waters of the State without an NPDES permit, are in violation of the Environmental Protection Act and Clean Water Act.

**C. Contents of Notice of Intent.** The Notice of Intent shall be signed in accordance with Part VI.G (Signatory Requirements) of this permit by all of the entities identified in paragraph 2 below and shall include the following information:

1. The mailing address, and location of the construction site for which the notification is submitted. Where a mailing address for the site is not available, the location can be described in terms of the latitude and longitude of the approximate center of the facility to the nearest 15 seconds, or the nearest quarter section (if the section, township and range is provided) that the construction site is located in;
2. The owner's name, address, telephone number, and status as Federal, State, private, public or other entity.
3. The name, address and telephone number of the general contractor(s) that have been identified at the time of the NOI submittal;
4. The name of the receiving water(s), or if the discharge is through a municipal separate storm sewer, the name of the municipal operator of the storm sewer and the ultimate receiving water(s);
5. The number of any NPDES permit for any discharge (including non-storm water discharges) from the site that is currently authorized by an NPDES permit.
6. A yes or no indication of whether the owner or operator has existing quantitative data which describes the concentration of pollutants in storm water discharges (existing data should not be included as part of the NOI); and
7. A brief description of the project, estimated timetable for major activities, estimates of the number of acres of the site on which soil will be disturbed, and a certification that a storm water pollution prevention plan has been prepared for the facility in accordance with Part IV of this permit, and such plan provides compliance with local sediment and erosion plans or permits and/or storm water management plans or permits in accordance with paragraph VI.G.1 (Signatory Requirements) of this permit. (A copy of the plans or permits should not be included with the NOI submission).



**D. Where to Submit.**

1. Facilities which discharge storm water associated with construction site activity must use a NOI form provided by the Agency. NOIs must be signed in accordance with Part VI.G (Signatory Requirements) of this permit. NOIs are to be submitted certified mail to the Agency at the following address:

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Attention: Permit Section  
1021 North Grand East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

2. A copy of the letter of notification of coverage or other indication that storm water discharges from the site are covered under an NPDES permit shall be posted at the site in a prominent place for public viewing (such as alongside a building permit).

**E. Additional Notification.** Facilities which are operating under approved local sediment and erosion plans, grading plans, or storm water management plans, in addition to filing copies of the Notice of Intent in accordance with Part D above, shall also submit signed copies of the Notice of Intent to the local agency approving such plans in accordance with the deadlines in Part A above. See Part IV.D.2.d (Approved State or Local Plans).**F. Notice of Termination.** Where a site has been finally stabilized and all storm water discharges from construction sites that are authorized by this permit are eliminated, the permittee of the facility may submit a Notice of Termination that is signed in accordance with Part VI.G (Signatory Requirements) of this permit.

1. The Notice of Termination shall include the following information:

- a. The mailing address, and location of the construction site for which the notification is submitted. Where a mailing address for the site is not available, the location can be described in terms of the latitude and longitude of the approximate center of the facility to the nearest 15 seconds, or the nearest quarter section (if the section, township and range is provided) that the construction site is located in;
- b. The owner's name, address, telephone number, and status as Federal, State, private, public or other entity.
- c. The name, address and telephone number of the general contractor(s);
- d. The following certification signed in accordance with Part VI.G (Signatory Requirements) of this permit:

"I certify under penalty of law that all storm water discharges associated with construction site activity from the identified facility that are authorized by NPDES general permit ILR100000 have otherwise been eliminated. I understand that by submitting this notice of termination, that I am no longer authorized to discharge storm water associated with construction site activity by the general permit, and that discharging pollutants in storm water associated with construction site activity to Waters of the State is unlawful under the Environmental Protection Act and Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this notice of termination does not release an operator from liability for any violations of this permit or the Clean Water Act."

For the purposes of this certification, elimination of storm water discharges associated with industrial activity means that all disturbed soils at the identified facility have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with construction activities from the identified site that are authorized by a NPDES general permit have otherwise been eliminated.

2. All Notices of Termination are to be sent, using the form provided by the Agency to the address in paragraph II.D.1.

**Part III. SPECIAL CONDITIONS, MANAGEMENT PRACTICES, AND OTHER NON-NUMERIC LIMITATIONS****A. Prohibition on Non-Storm Water Discharges.**

1. Except as provided in paragraph I.B.2 and 2 below, all discharges covered by this permit shall be composed entirely of storm water.
2.
  - a. Except as provided in paragraph b below, discharges of materials other than storm water must be in compliance with a NPDES permit (other than this permit) issued for the discharge.
  - b. The following non-storm water discharges may be authorized by this permit provided the non-storm water component of the discharges is in compliance with paragraph IV.D.5 (Non-Storm Water Discharges): discharges from fire fighting activities; fire hydrant flushings; waters used to wash vehicles or control dust; potable water sources including waterline flushings; irrigation drainages; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

**Part IV. STORM WATER POLLUTION PREVENTION PLANS**

A storm water pollution prevention plan shall be developed for each construction site covered by this permit. Storm water pollution prevention plans shall be prepared in accordance with good engineering practices. The plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with construction site activity from the facility. In addition, the plan shall describe and ensure the implementation of practices which will be used to reduce the pollutants in storm water discharges associated with construction site activity and to assure compliance with the terms and conditions of this permit. Facilities must implement the provisions of the storm water pollution prevention plan required under this part as a condition of this permit.

**A. Deadlines for Plan Preparation and Compliance.**

The plan shall:

1. Be completed prior to the start of the construction to be covered under this permit and updated as appropriate;
2. Provide for compliance with the terms and schedule of the plan beginning with the initiation of construction activities.

**B. Signature and Plan Review.**

1. The plan shall be signed in accordance with Part VI.G (Signatory Requirements), and be retained on-site at the facility which generates the storm water discharge in accordance with Part VI.E (Duty to Provide Information) of this permit.
2. The permittee shall make plans available upon request from this Agency or a local agency approving sediment and erosion plans, grading plans, or storm water management plans; or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the municipal operator of the system.
3. The Agency may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this Part. Such notification shall identify those provisions of the permit which are not being met by the plan, and identify which provisions of the plan requires modifications in order to meet the minimum requirements of this part. Within 7 days from receipt of notification from the Agency, the permittee shall make the required changes to the plan and shall submit to the Agency a written certification that the requested changes have been made. Failure to comply shall terminate authorization under this permit.
4. All storm water pollution prevention plans required under this permit are considered reports that shall be available to the public under Section 308(b) of the CWA. The permittee shall make plans available to members of the public upon request by the public. However, the permittee may claim any portion of a storm water pollution prevention plan as confidential in accordance with 40 CFR Part 2.

**C. Keeping Plans Current.** The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the Waters of the State and which has not otherwise been addressed in the plan or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified under paragraph D.2 below, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with construction site activity. In addition, the plan shall be amended to identify any new contractor and/or subcontractor that will implement a measure of the storm water pollution prevention plan. Amendments to the plan may be reviewed by the Agency in the same manner as Part IV.B above.

**D. Contents of Plan.** The storm water pollution prevention plan shall include the following items:

1. **Site Description.** Each plan shall, provide a description of the following:
  - a. A description of the nature of the construction activity;
  - b. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading);
  - c. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities;
  - d. An estimate of the runoff coefficient of the site after construction activities are completed and existing data describing the soil or the quality of any discharge from the site;
  - e. A site map indicating drainage patterns and approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking, areas of soil disturbance, the location of major structural and nonstructural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands), and locations where storm water is discharged to a surface water; and
  - f. The name of the receiving water(s) and the ultimate receiving water(s), and areal extent of wetland acreage at the site.
2. **Controls.** Each plan shall include a description of appropriate controls that will be implemented at the construction site. The plan will clearly describe for each major activity identified in paragraph D.1 above, appropriate controls and the timing during the construction process that the controls will be implemented. (For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls will be actively maintained until final stabilization of those portions of the site upward of the perimeter control. Temporary perimeter controls will be removed after final stabilization). The description of controls shall address as appropriate the following minimum components:
  - a. **Erosion and Sediment Controls.**
    - (i). **Stabilization Practices.** A description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be included in the plan. Except as provided in paragraphs (A) and (B) below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
      - (A). Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

- (B). Where construction activity will resume on a portion of the site within 21 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 21 days) then stabilization measures do not have to be initiated on that portion of site by the 14th day after construction activity temporarily ceased.
- (ii). **Structural Practices.** A description of structural practices to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. Structural practices should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA.
- b. **Storm Water Management.** A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. Structural measures should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA. This permit only addresses the installation of storm water management measures, and not the ultimate operation and maintenance of such structures after the construction activities have been completed and the site has undergone final stabilization. Permittees are responsible for only the installation and maintenance of storm water management measures prior to final stabilization of the site, and are not responsible for maintenance after storm water discharges associated with industrial activity have been eliminated from the site.
- (i). Such practices may include: storm water detention structures (including wet ponds); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices). The pollution prevention plan shall include an explanation of the technical basis used to select the practices to control pollution where flows exceed predevelopment levels.
- (ii). Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).
- c. **Other Controls.**
- (i). **Waste Disposal.** No solid materials, including building materials, shall be discharged to Waters of the State, except as authorized by a Section 404 permit.
- (ii). The plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.
- d. **Approved State or Local Plans.**
- (i). The management practices, controls and other provisions contained in the storm water pollution prevention plan must be at least as protective as the requirements contained in Illinois Environmental Protection Agency's Illinois Urban Manual, 1995. Facilities which discharge storm water associated with construction site activities must include in their storm water pollution prevention plan procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials. Requirements specified in sediment and erosion site plans or site permits or storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI to be authorized to discharge under this permit, incorporated by reference and are enforceable under this permit even if they are not specifically included in a storm water pollution prevention plan required under this permit. This provision does not apply to provisions of master plans, comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit that is issued for the construction site.
- (ii). Dischargers seeking alternative permit requirements are not authorized by this permit and shall submit an individual permit application in accordance with 40 CFR 122.26 at the address indicated in Part II.D (Where to Submit) of this permit, along with a description of why requirements in approved local plans or permits should not be applicable as a condition of an NPDES permit.
3. **Maintenance.** A description of procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures identified in the site plan.
4. **Inspections.** Qualified personnel (provided by the permittee) shall inspect disturbed areas of the construction site that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater or equivalent snowfall.
- a. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.
- b. Based on the results of the inspection, the description of potential pollutant sources identified in the plan in accordance with paragraph IV.D.1 (Site Description) of this permit and pollution prevention measures identified in the plan in accordance with paragraph IV.D.2 (Controls) of this permit shall be revised as appropriate as soon as practicable after such inspection. Such modifications shall provide for timely implementation of any changes to the plan within 7 calendar days following the inspection.
- c. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph b above shall be made and retained as part of the storm water pollution prevention plan for at least three years after the date of inspection. The report shall be signed in accordance with Part VI.G (Signatory Requirements) of this permit.

- d. The permittee shall complete and submit within 5 days an "Incidence of Noncompliance" (ION) report for any violation of the storm water pollution prevention plan observed during an inspection conducted, including those not required by the Plan. Submission shall be on forms provided by the Agency and include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance.
- e. All reports of noncompliance shall be signed by a responsible authority as defined in Part VI.G (Signatory Requirements).
- f. All reports of noncompliance shall be mailed to the Agency at the following address:

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Compliance Assurance Section  
1021 North Grand East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

5. **Non-Storm Water Discharges** - Except for flows from fire fighting activities, sources of non-storm water listed in paragraph III.A.2 of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and insure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

**E. Additional requirements for storm water discharge from industrial activities other than construction, including dedicated asphalt plants, and dedicated concrete plants.** - This permit may only authorize a storm water discharge associated with industrial activity from a construction site that is mixed with a storm water discharge from an industrial source other than construction, where:

1. the industrial source other than construction is located on the same site as the construction activity;
2. storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of this permit; and
3. storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring (including storm water discharges from dedicated asphalt plants (other than asphalt emulsion facilities) and dedicated concrete plants) are in compliance with the terms, including applicable NOI or application requirements, of a different NPDES general permit or individual permit authorizing such discharges.

**F. Contractors.**

1. The storm water pollution prevention plan must clearly identify for each measure identified in the plan, the contractor(s) or subcontractor(s) that will implement the measure. All contractors and subcontractors identified in the plan must sign a copy of the certification statement in paragraph 2 below in accordance with Part VI.G (Signatory Requirements) of this permit. All certifications must be included in the storm water pollution prevention plan except for owners that are acting as contractor.
2. **Certification Statement.** All contractors and subcontractors identified in a storm water pollution prevention plan in accordance with paragraph 1 above shall sign a copy of the following certification statement before conducting any professional service at the site identified in the storm water pollution prevention plan:

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR100000) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

The certification must include the name and title of the person providing the signature in accordance with Part VI.G of this permit; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

**Part V. RETENTION OF RECORDS**

- A. The permittee shall retain copies of storm water pollution prevention plans and all reports and notices required by this permit, and records of all data used to complete the Notice of Intent to be covered by this permit, for a period of at least three years from the date that the site is finally stabilized. This period may be extended by request of the Agency at any time.
- B. The permittee shall retain a copy of the storm water pollution prevention plan required by this permit at the construction site from the date of project initiation to the date of final stabilization.

**Part VI. STANDARD PERMIT CONDITIONS**

**A. Duty to Comply.**

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Illinois Environmental Protection Act and the CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
2. **Penalties for Violations of Permit Conditions.**

a. Criminal

- (1). Negligent Violations The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 years, or both. The Environmental Protection Act provides that any person who negligently violates subsection (f) of Section 12 of the Act, any provision of any regulation, standard, or filing requirement under subsection (b) of Section 39 of the Act, or any

NPDES permit issued under the Act is subject to a fine not to exceed \$10,000 for each day of violation.

- (2). Knowing Violations The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 year, or both. The Environmental Protection Act provides that any person who knowingly violates subsection (f) of Section 12 of the Act, any provision of any regulation, standard, or filing requirement under subsection (b) of Section 39 of the Act, or any NPDES permit issued under the Act commits a Class 4 felony, and in addition to any other penalty prescribed by law is subject to a fine not to exceed \$25,000 for each day of violation.
  - (3). Knowing Endangerment The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than \$250,000, or by imprisonment for not more than 15 years, or both.
  - (4). False Statement The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than 2 years, or by both. If a conviction of a permittee is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309.c.4 of the Clean Water Act). The Environmental Protection Act provides that any person who knowingly makes any false statement, representation, or certification in an application form, or form pertaining to a NPDES permit or who knowingly renders inaccurate any monitoring device or record required in connection with any such permit or with any discharge which is subject to the provisions of subsection (f) of Section 12 of the Act commits a Class A misdemeanor, and in addition to any other penalties provided by law is subject to a fine not to exceed \$10,000 for each day of violation.
- b. Civil Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Environmental Protection Act provides that any person who violates subsection (f) of Section 12 of the Act, any provision of any regulation, standard, or filing requirement under subsection (b) of Section 39 of the Act, or any NPDES permit issued under the Act is subject to a civil penalty not to exceed \$50,000 for each violation and an additional civil penalty of not to exceed \$10,000 for each day during which the violation continues.
  - c. Administrative Penalties - The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:
    - (1). Class I penalty Not to exceed \$10,000 per violation nor shall the maximum amount exceed \$25,000.
    - (2). Class II penalty Not to exceed \$10,000 per day for each day during which the violation continues nor shall the maximum amount exceed \$125,000.
- B. **Continuation of the Expired General Permit.** This permit expires five years from the date of issuance. An expired general permit continues in force and effect until a new general permit or an individual permit is issued. Only those facilities authorized to discharge under the expiring general permit are covered by the continued permit.
  - C. **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
  - D. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
  - E. **Duty to Provide Information.** The permittee shall furnish within a reasonable time to the Agency or local agency approving sediment and erosion plans, grading plans, or storm water management plans; or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the municipal operator of the system, any information which is requested to determine compliance with this permit. Upon request, the permittee shall also furnish to the Agency or local agency approving sediment and erosion plans, grading plans, or storm water management plans; or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the municipal operator of the system, copies of records required to be kept by this permit.
  - F. **Other Information.** When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Agency, he or she shall promptly submit such facts or information.
  - G. **Signatory Requirements.** All Notices of Intent, storm water pollution prevention plans, reports, certifications or information either submitted to the Agency or the operator of a large or medium municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed.
    1. All Notices of Intent shall be signed as follows:
      - a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
      - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
      - c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer

having responsibility for the overall operations of a principal geographic unit of the agency.

2. All reports required by the permit and other information requested by the Agency shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described above and submitted to the Agency.
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).
  - c. **Changes to authorization.** If an authorization under paragraph I.C (Authorization) is no longer accurate because a different individual or position has responsibility for the overall operation of the construction site, a new authorization satisfying the requirements of paragraph I.C must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.
  - d. **Certification.** Any person signing documents under this Part shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- H. **Penalties for Falsification of Reports.** Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or by both. Section 44(j)(4) and (5) of the Environmental Protection Act provides that any person who knowingly makes any false statement, representation, or certification in an application form, or form pertaining to a NPDES permit commits a Class A misdemeanor, and in addition to any other penalties provided by law is subject to a fine not to exceed \$10,000 for each day of violation.
- I. **Penalties for Falsification of Monitoring Systems.** The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the CWA. The Environmental Protection Act provides that any person who knowingly renders inaccurate any monitoring device or record required in connection with any NPDES permit or with any discharge which is subject to the provisions of subsection (f) of Section 12 of the Act commits a Class A misdemeanor, and in addition to any other penalties provided by law is subject to a fine not to exceed \$10,000 for each day of violation.
- J. **Oil and Hazardous Substance Liability.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA.
- K. **Property Rights.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.
- L. **Severability.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.
- M. **Transfers.** This permit is not transferable to any person except after notice to the Agency. The Agency may require the discharger to apply for and obtain an individual NPDES permit as stated in Part I.C (Authorization).
- N. **Requiring an Individual Permit or an Alternative General Permit.**
  1. The Agency may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. Where the Agency requires a discharger authorized to discharge under this permit to apply for an individual NPDES permit, the Agency shall notify the discharger in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Applications shall be submitted to the Agency indicated in Part II.D (Where to Submit) of this permit. The Agency may grant additional time to submit the application upon request of the applicant. If a discharger fails to submit in a timely manner an individual NPDES permit application as required by the Agency under this paragraph, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified by the Agency for application submittal.
  2. Any discharger authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. In such cases, the permittee shall submit an individual application in accordance with the requirements of 40 CFR 122.26(c)(1)(ii), with reasons supporting the request, to the Agency at the address indicated in Part II.D (Where to Submit) of this permit. The request may be granted by issuance of any individual permit or an alternative general permit if the reasons cited by the permittee are adequate to support the request.
  3. When an individual NPDES permit is issued to a discharger otherwise subject to this permit, or the discharger is authorized to discharge under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to a discharger otherwise subject to this permit, or the discharger is denied for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee remains in effect, unless otherwise specified by the Agency.
- O. **State/Environmental Laws.** No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

- P. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.
- Q. **Inspection and Entry.** The permittee shall allow the Agency or, in the case of a construction site which discharges through a municipal separate storm sewer, an authorized representative of the municipal operator or the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:
1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
  2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
  3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).
- R. **Permit Actions.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

#### Part VII. REOPENER CLAUSE

- A. If there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with industrial activity covered by this permit, the discharger may be required to obtain individual permit or an alternative general permit in accordance with Part I.C (Authorization) of this permit or the permit may be modified to include different limitations and/or requirements.
- B. Permit modification or revocation will be conducted according to provisions of 35 Ill. Adm. Code, Subtitle C, Chapter I and the provisions of 40 CFR 122.62, 122.63, 122.64 and 124.5.

#### Part VIII. DEFINITIONS

**"Agency"** means the Illinois Environmental Protection Agency.

**"Best Management Practices"** ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**"Commencement of Construction"** - The initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

**"CWA"** means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.)

**"Dedicated portable asphalt plant"** - A portable asphalt plant that is located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR 443.

**"Dedicated portable concrete plant"** - A portable concrete plant that is located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

**"Dedicated sand or gravel operation"** - An operation that produces sand and/or gravel for a single construction project.

**"Director"** means the Director of the Illinois Environmental Protection Agency or an authorized representative.

**"Final Stabilization"** means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70% the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent stabilization measures (such as the use of riprap, gabions or geotextiles) have been employed.

**"Large and Medium municipal separate storm sewer system"** means all municipal separate storm sewers that are either:

- (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or
- (ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or
- (iii) owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

**"NOI"** means notice of intent to be covered by this permit (see Part II of this permit.)

**"Point Source"** means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Runoff coefficient" means the fraction of total rainfall that will appear at the conveyance as runoff.

"Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

"Storm Water Associated with Industrial Activity" means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. For the categories of industries identified in subparagraphs (i) through (x) of this subsection, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in subparagraph (xi), the term includes only storm water discharges from all areas listed in the previous sentence (except access roads) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the: storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally or municipally owned or operated that meet the description of the facilities listed in this paragraph (i)-(xi)) include those facilities designated under 40 CFR 122.26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

- (i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards which are exempted under category (xi) of this paragraph);
- (ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28, 29, 311, 32, 33, 3441, 373;
- (iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations meeting the definition of a reclamation area under 40 CFR 434.11(l)) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator;
- (iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;
- (v) Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;
- (vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;
- (vii) Steam electric power generating facilities, including coal handling sites;
- (viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42, 44, and 45 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under subparagraphs (i)-(vii) or (ix)-(xi) of this subsection are associated with industrial activity;
- (ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with 40 CFR 503;
- (x) Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale;
- (xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 31 (except 311), 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included within categories (i)-(x)).

"Waters" mean all accumulations of water, surface and underground, natural, and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon the State of Illinois, except that sewers and treatment works are not included except as specially mentioned; provided, that nothing herein contained shall authorize the use of natural or otherwise protected waters as sewers or treatment works except that in-stream aeration under Agency permit is allowable.